

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF VIRGINIA
ALEXANDRIA DIVISION

UNITED STATES, et al., : Civil Action No.:
Plaintiffs, : 1:23-cv-108
versus : Tuesday, September 17, 2024
GOOGLE LLC, : Alexandria, Virginia
Defendant. : Day 7 a.m.
: Pages 1-166

The above-entitled bench trial was heard before the Honorable Leonie M. Brinkema, United States District Judge. This proceeding commenced at 9:00 a.m.

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COMPUTERIZED TRANSCRIPTION OF STENOGRAPHIC NOTES

1 TABLE OF CONTENTS
22 WITNESSES
3

3 On behalf of the Plaintiffs:

4 NIRMAL JAYARAM

5 Direct examination by Ms. Wood	6
6 Cross-examination by Ms. Rhee	105

6 EXHIBITS
7

7 On behalf of the Plaintiff:

8 Admitted

9 Number 110, page 1. 0009 through 0011	13
10 Number 132	18
11 Number 324	23
12 Number 278	26
13 Number 520	35
14 Number 363	47
15 Number 401	52
16 Number 402	53
17 Number 536	59
18 Number 460	61
19 Number 423	63
20 Number 858	64
21 Number 737	66
22 Number 815	67
23 Number 857	72
24 Number 1545	76
25 Number 478	83
26 Number 545	84
27 Number 588	86
28 Number 605	89
29 Number 734	95
30 Number 897	97
31 Number 929	99
32 Number 1014	104
33 Number 284 and 1539	105

22 On behalf of the Defendant:

23 Admitted

24 Number 277	123
25 Number 172	136
26 Number 372	141

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

MISCELLANY

Proceedings September 17, 2024	5
Certificate of Court Reporter	166

1

P R O C E E D I N G S

2

THE DEPUTY CLERK: Civil Action Number

3

1:23-cv-108, United States of America, et al. versus Google
LLC.

5

6

Will counsel please note their appearance for the
record, first for the plaintiff.

7

8

MR. HENRY: Good morning, Your Honor. Ty Henry on
behalf of the plaintiff states.

9

THE COURT: Good morning.

10

11

MS. WOOD: Good morning, Your Honor. Julia Tarver
Wood from the Department of Justice for the United States.
With me are my colleagues, Aaron Teitelbaum --

13

MR. TEITELBAUM: Good morning, Your Honor.

14

15

MS. WOOD: -- Tim Longman, Michael Wolin and Jeff
Vernon.

16

THE COURT: Good morning.

17

18

MS. WOOD: And also Mr. Mene from the U.S.
Attorney's Office, of course.

19

THE COURT: Mr. Mene.

20

21

MS. DUNN: Good morning, Your Honor. Karen Dunn
from Google, and with me are Jeannie Rhee, Anita Liu,
Bill Isaacson, Craig Reilly and Matt Spalding.

23

24

THE COURT: Good morning. All right. We're ready
to proceed.

25

My understanding is we're going to call -- is it

1 Ms. or Mr.?

2 MS. WOOD: Mr. Jayaram.

3 THE COURT: Yes.

4 MS. WOOD: Plaintiffs call Nirmal Jayaram to the
5 stand.

6 And we have already, to facilitate things, passed
7 out the binders. So the Court and witness and opposing
8 counsel should have --

9 MS. RHEE: And we --

10 MS. WOOD: Yes. We gave them a ten-minute head
11 start.

12 THE COURT: You can thank the criminal defendant
13 for that.

14 THE DEPUTY CLERK: Can you raise your right hand.
15 Thereupon,

16 NIRMAL JAYARAM,

17 having been called as a witness on behalf of the plaintiffs
18 and having been first duly sworn by the Deputy Clerk, was
19 examined and testified as follows:

20 (Time noted: 9:01 a.m.)

21 THE DEPUTY CLERK: Thank you.

22 DIRECT EXAMINATION

23 BY MS. WOOD:

24 Q Good morning, Mr. Jayaram. How are you?

25 A Good morning. I am fine. How are you?

1 THE COURT: Mr. Jayaram, I can already tell you're
2 going to have to speak louder and closer to the microphone,
3 which is that black box; all right?

4 THE WITNESS: Yes. Will do.

5 MS. WOOD: So if you'll just lean over into that
6 box, it will carry quite well.

7 BY MS. WOOD:

8 Q My name is Julia Wood, I'm from the Department of
9 Justice. I'm going to be asking you some questions on
10 behalf of the United States today; okay?

11 A Okay.

12 Q All right. Where do you currently work?

13 A I currently work at Google.

14 Q And how long have you worked at Google?

15 A For about 12 years now.

16 Q And so that means you started at Google in
17 approximately 2012?

18 A Yes, I did.

19 Q Do you know what month you started?

20 A October.

21 Q In October of 2012. Okay.

22 And you understand that the Google is the
23 defendant in this matter; right?

24 A Yes, I do.

25 Q And are you represented by the same counsel that is

1 representing Google?

2 A Yes.

3 Q Okay. Now, when you joined Google, you worked on what
4 is sometimes referred to as the buy-side; is that right?

5 A Yes, that's correct.

6 Q And you worked on -- Google had two separate buy-side
7 products; is that right?

8 A Yes.

9 Q It had a demand-side platform that came to be called
10 DV360; is that right?

11 A Yes, Google has DV360.

12 Q Okay. And Google also had an ad network referred to as
13 Google Ads at one point; correct?

14 A Yes. Google has Google Ads as well.

15 Q Okay. So if I refer today in my questions to Google
16 Ads, you'll understand what I'm referring to?

17 A Yes, I do.

18 Q And if I refer to DV360 as Google's demand-side
19 platform, you'll understand what I'm referring to?

20 A Yes.

21 Q Okay. Now, those two buy-side products, Google Ads and
22 DV360, those were marketed separately to advertising
23 customers; is that right?

24 A No, I would not characterize it that way.

25 Q Did Google market DV360 -- have a branding for DV360

1 that was different than the branding for Google Ads?

2 A I would not characterize it that way.

3 Q Okay. But you would call them two separate products?

4 A Yes.

5 Q Okay. And at the time you joined Google in October of
6 2012, if Google's -- if the Google Ads advertiser customers
7 wanted to use another exchange, those advertisers could not
8 purchase display inventory on another exchange; isn't that
9 right?

10 A In 2012?

11 Q Yes.

12 A Through AdWords, they could not.

13 Q Okay. Now, you just referred to AdWords. Is it okay
14 if, to save the Court multiple different names for the same
15 product, we refer to that as Google Ads?

16 A Yes.

17 Q Understanding that it went by AdWords at that period of
18 time; is that right?

19 A Yes.

20 Q Okay. So go back to my question.

21 If a Google Ads advertiser wanted to purchase
22 inventory offered by a third-party exchanges, a Google
23 advertiser could not do that when you joined in 2012; is
24 that right?

25 A Yes.

1 Q Okay. And at some point after you joined in
2 October 2012, you became involved in discussions about
3 whether Google Ads should be able -- Google Ads advertisers
4 should be able to purchase on alternative exchanges; is that
5 right?

6 A Yes.

7 Q And who did you report to in October of 2012?

8 A Dr. Ali Amini.

9 Q You reported to Mr. Amini.

10 And at the time you joined, who was Woojin Kim?

11 A Woojin Kim was a product manager working on buy-side at
12 the time.

13 Q And who was Bhavesh Mehta?

14 A Bhavesh Mehta was senior director of engineering on the
15 buy-side at the time.

16 Q And who was Oren Zamir?

17 A Oren Zamir was a senior director at the time.

18 Q And who was Scott Spencer?

19 A I do not recall his exact role at the time.

20 Q Now, at the time you joined, were you aware that
21 individuals within Google were concerned that Google Ads was
22 competitively disadvantaged against buy-side competition
23 because Google Ads could not purchase on third-party
24 exchanges?

25 A Yes.

1 Q And at the time you joined, were you aware that Google
2 executives believed that the Google Ads buy-side was
3 subsidizing the sale side, meaning AdX, by not allowing
4 Google Ads' customers to purchase anywhere other than AdX?

5 A No, I was not.

6 Q At the time that you were involved in and working on
7 these products, you understood that Google Ads, buying
8 exclusively on AdX, weakened Google Ads' position in the
9 marketplace; is that right?

10 A I would not characterize it that way.

11 Q Were you aware that others at Google characterized it
12 that way?

13 A I know -- I know that some believe that buying on
14 third-party exchanges could make the product better, but I
15 would not characterize Google Ads as being weak as a result
16 of that.

17 Q Would you agree that Google Ads was weakened --
18 regardless of whether you reached the ultimate conclusion
19 that it was weak, do you agree that that weakened the
20 competitiveness of Google Ads?

21 A At the time I joined, no.

22 Q Okay. And were you aware at the time you joined that
23 from Google executives' perspective, AdX did not behave like
24 an arm's-length buyer -- Google Ads did not behave like an
25 arm's-length buyer on AdX?

1 A No.

2 Q And do you recall whether there was discussion about
3 erecting a firewall between the people that worked on the
4 buy-side for Google Ads and the people that worked on the
5 sell-side for AdX?

6 A I do not recall specific discussions around the
7 firewall.

8 Q Okay.

9 MS. WOOD: Your Honor, I'd like to show the
10 witness PTX 110.

11 THE COURT: Any objection to 110?

12 MS. RHEE: Your Honor, the same standing objection
13 with respect to what looks to be a compilation of notes, at
14 least with respect to the comment bubbles on the side for
15 which there's been no attribution, I believe consistent with
16 the Court's prior rulings, we would ask for the comment
17 bubbles to be stripped.

18 MS. WOOD: And, Your Honor, for the record, I'm
19 only seeking to introduce -- and we can tailor the exhibit
20 accordingly -- two pages -- actually, three pages, from
21 Bates stamp 83.009 to 85.0011. And then the title page just
22 for context. And we will strike the comments on those
23 pages, redact them.

24 THE COURT: I'm sorry. Okay. Yeah. So the only
25 comments that I see are on page 0010; correct?

1 MS. WOOD: There is -- 0010 has comments, and then
2 the very first page has comments, but I'm not going to
3 question the witness about that, and I'm happy to redact
4 both sets of comments.

5 THE COURT: All right. So Plaintiffs' 110 is in
6 as to page 1 only. And then 0009 through 0011 with the
7 comments removed. All right. And none of the rest of
8 that's going to be in evidence.

9 MS. WOOD: Thank you, Your Honor.

10 THE COURT: All right.

11 (Plaintiffs' Exhibit Number 110, page 1. 0009 through 0011
12 **admitted into evidence.**)

13 BY MS. WOOD:

14 Q So you also have this in your binder, Mr. Jayaram.
15 Whatever is easier for you to review. It will be up on that
16 screen, but it's also in your binder.

17 MS. RHEE: Oh, thank you for the blowup.

18 MS. WOOD: Yes.

19 BY MS. WOOD:

20 Q Do you see the title there "GDN as AdX buyer"?

21 A I see it.

22 Q And the people listed as the team here, those are the
23 people you just identified; correct, that you worked with at
24 this time?

25 A I knew who these people were. I didn't work with many

1 of them around the time I started at Google.

2 Q These people worked on the buy-side of the business;
3 correct?

4 A That's my recollection, yes.

5 Q And you worked on the buy-side of the business;
6 correct?

7 A I did.

8 Q Okay. And do you see -- if you go down to the bottom
9 part of the page, Number 1, it reads: "From GDN's
10 perspective" -- GDN, that's a reference to Google Ads; is
11 that right?

12 A Yes.

13 Q "From Google Ads' perspectives, Google Ads is
14 competitively disadvantaged against buy-side competition";
15 do you see that?

16 A I see that.

17 Q And then A says: "In the auction ecosystem, we appear
18 to be running a buy-side subsidizes sell-side model: We are
19 artificially handicapping our buy-side, Google Ads, to boost
20 the attractiveness of our sell-side, AdX"; do you see that?

21 A I see that.

22 Q And then it states: "Specifically we have chosen to
23 limit Google Ads to buying only on AdX, an exclusivity that
24 makes AdX more attractive to sellers"; do you see that?

25 A I see that.

1 Q And you were aware of those facts at the time you
2 joined?

3 A I haven't seen this document before.

4 Q Regardless of whether you've seen the document, were
5 you aware generally of those facts?

6 A I don't agree with all the characterization.

7 Q I'm not asking if you agree.

8 I'm asking you, were you aware of those statements
9 or sentiments to that effect -- regardless of whether you
10 were aware of those specific statements, were you aware that
11 those were views held by people at Google at the time?

12 A No.

13 Q Including people running the buy-side business.

14 A No, I wasn't.

15 Q You weren't aware. Okay.

16 And then under B it says: "This greatly weakens
17 GDN's" -- meaning Google Ads' -- "position in the market";
18 do you see that?

19 A I see it.

20 Q And that was the statement you disagreed with earlier;
21 is that right?

22 A I disagreed with that specific statement, correct.

23 Q And in the overall organization of Google at the time,
24 who was more senior, you or Mr. Kim, Mehta, Zamir and
25 Spencer?

1 A At the time they were all more senior than I was.

2 Q Okay. And then do you see Number 2 says: "From AdX's

3 perspective, GDN" -- meaning Google Ads -- "does not behave

4 like an arm's-length buyer"; do you see that?

5 A I see it.

6 Q Were you aware of that at the time you were working on

7 the buy-side?

8 A I was not aware of the sentiment at that time.

9 Q The sentiment?

10 A Whatever is written here.

11 Q Okay. Were you aware of the sentiment generally?

12 A That GDN does not behave like an arm's-length buyer?

13 Q Correct.

14 A No, I was not.

15 Q Okay. And then if you turn to the top of the next

16 page, A says: "GDN, Google Ads, has visibility into

17 'confidential AdX data' due to shared infrastructure.

18 Publishers dislike this"; do you see that?

19 A I see it.

20 Q And then if you go below that, there's the discussion

21 of some proposed solution impact risks; do you see that?

22 A Yes.

23 Q And do you see the second one is: "Erect a firewall

24 (Chinese wall) between AdX and GDN or Google Ads"; do you

25 see that?

1 A Yes.

2 Q And under that it says: "A, GDN" -- or Google Ads
3 should -- "should be treated just like any other AdX buyer,
4 no special data access, no special policies, no special
5 treatment"; do you see that?

6 A Yes.

7 Q Do you recall at any time that you were working at
8 Google in the last 12 years that there was a firewall
9 imposed between AdX and Google Ads such that teams
10 consulting on those projects could not discuss strategic
11 advantages?

12 A I do not know of any formal firewall.

13 Q Okay. Now, at some point in time, Google began to
14 discuss whether it was necessary for Google Ads to bid more
15 broadly than just on AdX; is that right?

16 A Can you please repeat that question?

17 Q At some point in time, people within Google's buy-side
18 group began discussing that Google Ads should start bidding
19 on exchanges other than Google -- other than AdX?

20 A Yes.

21 Q Okay. Let me show you what has been marked for
22 identification as PTX 132.

23 THE COURT: Okay. We're going to get some
24 objection because I see the comments.

25 MS. WOOD: We're happy to redact the comments,

1 Your Honor.

2 MS. RHEE: Yes, Your Honor.

3 THE COURT: Other than that, there's no objection;
4 is that correct, Ms. Rhee?

5 MS. RHEE: Other than that, there is no objection.

6 THE COURT: All right. So 132, minus the
7 comments, is in.

8 (Plaintiffs' Exhibit Number **132 admitted into evidence.**)

9 BY MS. WOOD:

10 Q And, Mr. Jayaram, do you see -- the document is up on
11 your screen now, and the heading is "AdWords cross-exchange
12 bidding"; do you see that?

13 A Yes.

14 Q And there's a summary, and Number 1 under the summary
15 reads: "GDN" -- or Google Ads -- "needs to be
16 cross-exchange competitively." That's what we've been
17 talking about, that in order for Google Ads to be
18 competitive as a buy-side product, it needs to bid on more
19 than one exchange, more than just AdX; right?

20 A I see that statement here.

21 Q And the next statement reads: "We will do it via
22 xBid's implementation"; do you see that?

23 A I do.

24 Q And xBid's implementation refers to the existing
25 implementation that DV360 already had with third-party

1 exchanges; correct?

2 A That's my understanding.

3 Q Now -- and in the middle of that paragraph it says:

4 "Our assumption is that GDN" -- or Google Ads -- "needs to
5 become a cross-exchange buyer to stay relevant as a
6 network"; do you see that?

7 A Yes.

8 Q And then under Number 2 it says: "However, that has
9 implications for the publisher base"; do you see that?

10 A I see it.

11 Q It says: "Currently, AdSense and AdX use AdWords" --
12 that refers to Google Ads; right?

13 A Yes.

14 Q "Currently AdSense and AdX use Google Ads demand as a
15 unique sales proposition"; right?

16 A I see that statement.

17 Q And the term there is unique sales proposition; right?

18 A I see that statement.

19 Q And then it says: "The main concern from AdSense and
20 AdX is eliminating the USP."

21 Do you know what USP means?

22 A I cannot recall the expansion right now. I have a
23 sense for what that word means.

24 Q What's your sense of what it means?

25 A Potential benefit, or something like that.

1 Q Okay. "The main concern from AdSense and AdX is
2 eliminating the benefit that they are the only access point
3 for dynamic AdWords or Google Ads demand"; do you see that?

4 A I see that.

5 Q Goes on to write: "Given the current market position
6 of AdX versus other yield managers, if publishers can get
7 the same AdWords or Google Ads, RTB demand" -- RT demand is
8 real-time bidding demand; right?

9 A Yes.

10 Q "From any yield management/exchange partner, we expect
11 many publishers would terminate their AdX relationship in
12 favor of their preferred alternate vendor."

13 That was the concern that was expressed at the
14 time; is that right?

15 A I see it in this document.

16 Q Now, if you turn to the next page that ends in Bates
17 stamp 788, just under commercialization, which is the third
18 bullet point at the top, there's a statement: "The
19 commercialization and messaging of this project could be
20 designed jointly with the sell-side to avoid
21 misunderstandings and combat the likely exaggerations of our
22 competitors"; do you see that?

23 A I do.

24 Q So there was some concern about how this expansion of
25 Google Ads into other exchanges might hurt sell-side PR; is

1 that right?

2 A I see that concern posted here.

3 Q Okay. And, again, the reason why Google was
4 considering launching AWBid was Google knew that would be a
5 benefit for Google Ads' advertisers; correct?

6 A It could be a benefit.

7 Q And, specifically, Google Ads buying on third-party
8 exchanges benefited Google Ads' advertiser because they
9 could participate in additional advertising opportunities;
10 right?

11 A Yes.

12 Q And then participating in auctions on third-party
13 exchanges allowed those advertisers to potentially end up
14 with more conversions or clicks or whatever their
15 advertising objective was; correct?

16 A Yes.

17 Q So, eventually, Google limited the AWBid ability to
18 participate in third-party exchange auctions to remarketing
19 campaigns; is that right?

20 A Not necessarily.

21 Q Well, when was the first time that Google Ads was
22 allowed to buy anything of any kind on a third-party
23 exchange?

24 A The product officially launched in 2015. There were
25 some pilot studies done prior to that as well.

1 Q Okay. So for two to three years, Google Ads couldn't
2 bid on any exchange for anything at any time; is that right?

3 A As I mentioned, there were some pilot studies run
4 during the period to measure the quality of the buying
5 before we could officially launch it in 2015.

6 Q Okay. So it was officially launched in 2015?

7 A Yes.

8 Q And when it was officially launched in 2015, it was
9 limited to inventory that was classified as remarketing;
10 correct?

11 A Yes.

12 Q Okay. And we can both agree that remarketing is a
13 subset of the total campaigns for which advertisers have
14 campaign objectives on Google Ads; correct?

15 A Yes.

16 Q Okay. And non-remarketing ads were ineligible in 2015
17 to bid on third-party exchanges; correct?

18 A Yes.

19 Q All right. Let's look at PTX 324.

20 MS. WOOD: This is also DTX 185 if that assists
21 the defense in deciding whether they want to object.

22 MS. RHEE: Thank you for that. Just give me one
23 second to ...

24 THE COURT: Again, though, there are comments.

25 I'm assuming the defense version does not have the comments.

1 MS. WOOD: I believe the defense version does, but
2 we'll still abide by the request to redact the comments,
3 Your Honor.

4 THE COURT: All right.

5 MS. RHEE: No objection, Your Honor.

6 THE COURT: It's in.

7 (Plaintiffs' Exhibit Number 324 admitted into evidence.)

8 BY MS. WOOD:

9 Q Mr. Jayaram, this is a document you prepared in or
10 about January 2014?

11 A Yes.

12 Q And the title of the document is "Impact of GDN Not
13 Participating In AdX Auctions"; do you see that?

14 A Yes.

15 Q And GDN again is Google Ads?

16 A Yes.

17 Q Okay. And this was based on a simulation that was run
18 on January 5th, 2014; is that right?

19 A That's right.

20 Q And I'd like you to look at the second page.

21 Do you see "cumulative"?

22 A Yes.

23 Q And it indicates there -- if you look at daily queries
24 which is in that first line; do you see that?

25 A Yes.

1 Q And if you look at daily queries for this experiment,
2 with GDN's Google Ads bids, there were 7.49 billion queries;
3 is that right?

4 A Yes.

5 Q But if you took out Google Ads, there were only
6 3.64 billion queries; is that right?

7 A Yes.

8 Q And then if -- so that means that if an exchange didn't
9 have access to Google Ads, that exchange would be missing
10 out on something like close to 4 billion inquiries --
11 queries; correct?

12 A Not necessarily.

13 Q Do you see there under "daily publisher payout," the
14 bottom row.

15 A Yes.

16 Q Do you see that with Google Ads' bids in AdX, daily
17 publisher payout is somewhere close to 3.9 million?

18 A Yes.

19 Q That's in one day?

20 A Yes.

21 Q And if you take out the Google Ads from AdX, the daily
22 publisher payout drops to 1.3 million; do you see that?

23 A Yes.

24 Q And that was the conclusion of your experiment;
25 correct?

1 A No. This was a simulation, which has its own
2 limitations.

3 Q Well, is this the data that you included in your
4 memorandum summarizing the experiment, the simulation?

5 A Yes.

6 Q Okay. And let's turn to the first sentence of the memo
7 in case people don't read down to the bottom where all the
8 numbers are. They can just read the first line.

9 "Auction simulations were performed to understand
10 the impact of Google Ads, GDN, not participating in AdX
11 auctions. The impact is a 70 percent reduction in Google
12 revenue and a 65 percent reduction in publisher payout"; do
13 you see that?

14 A Yes.

15 Q Now, I want to turn now to PTX 0278.

16 MS. WOOD: This is a document that is subject to
17 the stipulation we have with Google's counsel.

18 MS. RHEE: I apologize. What is the PTX again?

19 MS. WOOD: 278.

20 THE COURT: Again, with redactions, so those are
21 going to be out.

22 MS. WOOD: I won't be referencing the comments,
23 Your Honor.

24 THE COURT: Any objection?

25 MS. RHEE: With that, Your Honor, no objection.

1 THE COURT: All right. It's in.

2 (Plaintiffs' Exhibit Number 278 admitted into evidence.)

3 BY MS. WOOD:

4 Q Now, I can represent to you, based on the metadata that
5 was given in connection with this document, that this
6 document was dated December 12th, 2015, and the goal of the
7 document stated at the top was to "develop a buy/sell
8 unbiased view of the potential impact for Google on GDN
9 buying cross-exchange in order to inform performance and
10 programmatic GSL and PBS leadership perspectives"; do you
11 see that?

12 A I see it.

13 Q And the teams that are discussing this subject of
14 Google Ads buying on exchanges other than AdX, are teams
15 from not just the buy-side, but also the sell-side; correct?

16 A While, I haven't seen this document. Just looking
17 through what's listed here under the team?

18 Q If you could just answer my question.

19 Are the teams represented on this document
20 representing the buy-side and the sell-side?

21 A It looks that way, yes.

22 Q Okay. And in this document -- and so we can agree, at
23 least vis-a-vis this meeting, there was no firewall between
24 the buy-side and the sell-side; correct? Both sides were
25 participating in this meeting; correct?

1 A Both sides were participating.

2 Q Now, it says -- if you look under "background," the
3 last sentence in bold of the first paragraph says: "In this
4 doc, we're only exploring the impact of expanding AWBid" --
5 AWBid was the remarketing where only remarketing ads were
6 allowed to be bid on other exchanges beside AdX; correct?

7 A Yes, I see it.

8 Q And it says: "In this doc, we're only exploring the
9 impact of expanding AWBid to allow all of GDN's demand to
10 buy across exchange in order to increase access to
11 inventory."

12 Access to inventory is a reflection of the fact
13 that Google Ads' advertisers, all else equal, want access to
14 the most publisher inventory to get their highest matches
15 and ROI; correct?

16 A I do not agree with that statement completely.

17 Q Okay. You don't think that advertisers want access to
18 the most inventory?

19 A Yes.

20 Q Okay. Now, if you turn to the second page of the
21 document, there's a heading entitled "sell-side concerns";
22 do you see that?

23 A Yes.

24 Q And so, again, in this meeting there's a discussion of
25 sell-side concerns and how Google's buy-side, specifically

1 Google Ads, can help their sell-side; correct?

2 A I do not know if that is the case.

3 Q Okay. Under sell-side concerns, it says: "Today,
4 Google Ads" -- GDN -- "is the largest buyer, largest buyer
5 on each of the sell-side products, AdX, AFC and AdMob"; do
6 you see that?

7 A Yes.

8 Q Do you have any reason to believe that was not true at
9 the time?

10 A No.

11 Q "Despite the steps taken today to favor sell-side
12 products by allowing GDN" -- or Google Ads -- "to buy
13 cross-exchange, the spend on sell-side products could be
14 directly reduced, thereby slowing the growth of the
15 sell-side business"; do you see that?

16 A I see it.

17 Q And then it says in the next paragraph, the last two
18 sentences: "But when our competition is able to say they
19 have access to GDN" -- Google Ads -- "whether it is equal or
20 not, our sales and marketing teams will have to be prepared
21 for significant competitive pressure"; do you see that?

22 A Yes.

23 Q "our buy-side positioning will put sell-side
24 relationships at risk"; do you see that?

25 A I see it.

1 Q And that was a concern at Google at the time, that by
2 allowing full access to Google Ads on third-party exchanges,
3 Google would be putting sell-side relationships at risk;
4 correct?

5 A I have indirectly heard of that concern at the time.

6 Q Okay. And if we turn to the top of the next page,
7 there's an assumption at the top: "The most GDN" -- Google
8 Ads -- "would spend cross-exchange in 2016 is 7.6 percent of
9 total GDN, or Google Ads"; do you see that?

10 A I see that statement.

11 Q Do you have a recollection as to how much Google Ads
12 was spending cross-exchange as of this time period?

13 A Meaning at that time or now?

14 Q Yes, at that time.

15 A I do not recall the exact numbers.

16 Q Okay. So then there are certain scenarios that are
17 contemplated in the next section in the middle of the page;
18 do you see that? And one scenario would be to extend Google
19 Ads AWBid to all demand up to current DBM cross-exchange
20 rates; do you see that?

21 A I see it.

22 Q And DBM, that's a reference to DV360; right?

23 A Yes.

24 Q So DV360, as a buy-side product, wasn't limited in the
25 same way as Google Ads was in terms of its ability to bid on

1 third-party exchanges; correct?

2 A I do not agree with that categorization.

3 Q Do you see where it says that DBM cross-exchange rates
4 are approximately 53 percent?

5 A Yes.

6 Q Do you have any reason to believe that number is
7 inaccurate?

8 A I do not.

9 Q Okay. And then below that, do you see there's a chart,
10 and it says AdX and Rubicon; do you see that?

11 A Yes.

12 Q And do you see Rubicon was a third-party exchange that
13 was competing against AdX; correct?

14 A Yes.

15 Q And do you see, in this example, the pub would get
16 \$2.50 under the Rubicon simulation, but \$2 under the AdX
17 simulation?

18 A I am not familiar with the simulation to interpret the
19 results.

20 Q All right. Well, let's turn to the next page.

21 And do you see at the top of the page there's a
22 discussion of AdX risks and opportunities; do you see that?

23 A Yes.

24 Q And one opportunity from expanding Google Ads'
25 purchases on third-party exchanges is to "use AWBid data as

1 a lead list to have conversations with publishing partners";
2 do you see that?

3 A Yes.

4 Q So that's a reference to Google taking data about how
5 Google Ads bids with third-party exchanges and using that to
6 try to win more business from publishers; right?

7 A I am not familiar with this, so I can literally just
8 see what is in this document here.

9 Q Okay. And then do you see under the risks of bidding
10 more on third-party exchanges, the risk is "loss of
11 inventory and revenue decline"; do you see that?

12 A Yes.

13 Q "Pubs choose to make inventory available to other
14 exchanges based, in part, on GDN performance"; do you see
15 that?

16 A Yes.

17 Q That was a risk?

18 A I see that listed here as a risk.

19 Q And the second risk is that a "sales value proposition
20 is weakened"; correct?

21 A I see that listed here.

22 Q And third is that "a greater percentage of Google Ads
23 spend moves cross-exchange to third-party exchange
24 competitors"; correct?

25 A I see it written here.

1 Q And then the last one is that "Prebid rev share is
2 reduced, making other exchanges more competitive"; is that
3 right?

4 A I see it's written here, although -- yes.

5 Q And all of those are risks of what would happen to AdX
6 and AdX's competitive place in the marketplace if Google
7 allowed its Google Ads' advertisers to bid more widely on
8 third-party exchanges; correct?

9 A I -- I do not work on the sell-side, so beyond whatever
10 is listed here, I cannot add any more color to it.

11 Q Now, you recall that you were deposed in this matter in
12 August of 2020?

13 A Yes.

14 Q And during your deposition, do you recall being asked
15 about the scope and the size of this exclusivity of Google
16 Ads bidding only or primarily into AdX?

17 A I do not recall the exact question sitting here today.

18 Q Do you recall that as of August 2020 when you were
19 deposed, there were approximately 18 million Google Ads' ads
20 that were eligible to bid on AdX?

21 A I do not recall sitting here today.

22 Q And do you recall of that 18 million ads, that only 3
23 to 4 million were eligible to bid on third-party exchanges?

24 A I do not recall the numbers.

25 Q So why don't we turn to your deposition. That's the

1 deposition from August of 2020, and page 110.

2 MS. RHEE: Is this Volume 1?

3 THE COURT: Ms. Wood, is this Volume 1?

4 MS. WOOD: That's what I'm looking for, Your
5 Honor.

6 So the deposition -- yeah. The CID deposition is
7 the one I'm referring to.

8 BY MS. WOOD:

9 Q And, I'm sorry, I misspoke. I was referring to data
10 you were reciting from August 2020. You were actually
11 deposed in 2021. So apologies for the confusion about that.
12 That was my mistake.

13 Do you see the cover page of your deposition as
14 you were deposed in September of 2021?

15 A I see it.

16 Q Okay. So can we turn together to page 110.

17 A Yes.

18 Q And if you can read -- you can read it to yourself; we
19 don't need to read it out loud.

20 But do you see here if you start on page 109,
21 line 16.

22 A Yes.

23 Q And then if you read that to 110, line 21.

24 Does that refresh your recollection that as of
25 that time period, 18 million ads were eligible on AdX, but

1 only three to four were eligible on third-party exchanges?

2 A As I said at the time, I personally hadn't looked at
3 the numbers. I was going based on what Santos wrote in the
4 email. So those were the numbers that I saw in the email at
5 the time.

6 Q Okay. And you don't have any reason to believe -- any
7 specific reason to believe those numbers were inaccurate;
8 right?

9 A No.

10 Q All right. The Court has heard a little bit about --
11 maybe too much about header bidding in this case.

12 You're familiar with header bidding; right?

13 A Yes.

14 Q And do you recall preparing a memorandum summarizing
15 the buy-side's perspective on whether header bidding was
16 good or bad?

17 A I do not recall preparing that document.

18 Q So let's pull up PTX 520.

19 MS. WOOD: It is also subject to our stip and has
20 just a limited number of comment bubbles that I will not ask
21 the witness about.

22 THE COURT: All right. I assume it's not objected
23 to then?

24 MS. RHEE: No objection, Your Honor.

25 THE COURT: It's in.

1 (Plaintiffs' Exhibit Number 520 admitted into evidence.)

2 BY MS. WOOD:

3 Q Do you see there buy-side perspective on header
4 bidding? Does that refresh your recollection of working on
5 a document summarizing the buy-side's perspective on header
6 bidding?

7 A No, I do not recall preparing this document.

8 Q Okay. You see your name there; right?

9 A I do.

10 Q Okay. And do you see the date of September 2016?

11 A Yes.

12 Q Okay. So let's talk about this.

13 Do you have any recollection as to why you were
14 asked to prepare this document?

15 A No.

16 Q Okay. The summary says: "This document is offers a
17 GDN" -- Google Ads -- "/DBM" -- DV360 -- "buy-side
18 perspective on header bidding"; do you see that?

19 A I see it.

20 Q Okay. And the Number 1 under summary reads: "Header
21 bidding is here to stay. Revenue benefit to publisher,
22 better access for buyers"; do you see that?

23 A I see it.

24 Q Was that your perspective at the time? Did you agree
25 that header bidding was a benefit to publishers and provided

1 better access for buyers?

2 A I did not have that perspective at the time.

3 Q Okay. But yet, you -- your name is on the document
4 that states that; you agree with that?

5 A Yes.

6 Q Okay. But that wasn't your perspective?

7 A That's correct.

8 Q Okay. If you look under that, it says: "Header
9 bidding was developed as a reaction to EDA"; do you see
10 that?

11 A I see it.

12 Q And EDA, that's a reference to Enhanced Dynamic
13 Allocation; is that right?

14 A Yes.

15 Q It says "HB" -- header bidding -- "allows external
16 buyers to compete with DFP line items on the basis of actual
17 CPMs with all other demand in one flat action at the time of
18 decision-making. This was previously only possible for
19 Google Ads via EDA"; do you see that?

20 A Yes.

21 Q It says: "The main benefit to publishers from header
22 bidding is increased revenue due to actual versus average
23 CPM bid competition in between line items and EDA"; do you
24 see that?

25 A I see it.

1 Q Okay. And then on Number 2 there's a heading:

2 "DBM" -- that refers to DV360; right?

3 A Yes.

4 Q "DV360 needs to buy via header bidding"; do you see
5 that?

6 A Yes.

7 Q Did you agree with that at the time, that DV360 needed
8 to buy via header bidding?

9 A No.

10 Q You didn't agree with that, but your name is on this
11 document?

12 A That's correct.

13 Q Okay. And it says: "Today, DBM" -- or DV360 -- "is
14 disadvantaged by not directly participating in header
15 bidding"; do you see that?

16 A Yes.

17 Q "While we indirectly participate, we are paying too
18 much, as we have to go through other exchanges as middlemen
19 and reducing our competitiveness by having potentially
20 reduced" -- it says bis, but I think that means -- "bids
21 enter a first-price auction"; do you see that?

22 A Yes.

23 Q And it says: "In the absence of DBM" -- or DV360 --
24 "buying through header bidding directly, any query that
25 flows through header bidding either comes to us via

1 third-party exchanges, pay exchange middlemen, comes through
2 AdX at 20 percent margin, or is not reachable"; do you see
3 that?

4 A Yes.

5 Q And then it says: "DBM" -- meaning DV360 -- "as a pure
6 advertiser agent."

7 Did you view DV360 as a pure advertiser agent?

8 A Yes.

9 Q Okay. It says: "DV360 as a pure advertiser agent
10 should directly participate in header bidding and pass on
11 the gains to the advertiser."

12 Did you agree with that at the time?

13 A Not in its entirety.

14 Q Okay. But your name is on a document that states that;
15 correct?

16 A Yes.

17 Q Okay. And it says: "The following downsides are
18 frequently quoted to discourage buyers to participate in
19 header bidding. We think these are manageable or
20 misperceptions"; do you see that?

21 A Yes.

22 Q And then there's some lists of downsides of header
23 bidding including increased page load time,
24 self-competition, and first-price auction; do you see that?

25 A Yes.

1 Q And this memo refers to those problems as either
2 manageable or misperceptions; correct?

3 A Yes.

4 Q If you turn to the next page under those items we just
5 looked at, it says: "In summary, we believe that
6 sophisticated buyers are able to manage these challenges to
7 the point that the benefits far outweigh them"; do you see
8 that?

9 A Yes.

10 Q Did you disagree with that statement in this memo with
11 your name on it as well?

12 A We hadn't done nearly enough.

13 Q It's just a yes or no.

14 Do you disagree or agree with the statement from a
15 memo with your name on it?

16 A I disagree with that statement.

17 Q You disagree?

18 A Yes.

19 Q Okay. And then Number 3 it says: "From a buy-side
20 perspective, current Jedi design not competitive"; do you
21 see that?

22 A I see it.

23 Q And Jedi is a reference to the Exchange Bidding product
24 that Google was developing to try to entice the market away
25 from header bidding; correct?

1 A I know that Jedi is the Exchange Bidding product, but
2 the reasons for building it, being on the buy-side, I don't
3 have full visibility into it.

4 Q All right. Well, the Court's heard testimony on that,
5 and the Court can make their own conclusion.

6 Do you see there that it says: "From a buy-side
7 perspective, the current Jedi design as of the date of this
8 memo, September 2016, was not competitive vis-a-vis header
9 bidding"; do you see that?

10 A I see what's written.

11 Q And there's some examples in the chart below that, but
12 one of them is, in Jedi, the margin for the third party is
13 listed at 5 percent; do you see that?

14 A Yes.

15 Q And in header bidding, the margin is what?

16 A It's listed as 0 percent here.

17 Q Okay. And then do you see in terms of inventory
18 access, in Jedi, the inventory access is backfill, but in
19 header bidding, the inventory access is reservation and
20 backfill?

21 A I see it.

22 Q Okay. And that would be -- it's better for the
23 buy-side to have access to more inventory than less
24 inventory; right?

25 A Under certain conditions.

1 Q Under most conditions; correct?

2 A I would characterize it as under certain conditions.

3 Q Okay. And do you see under "who can buy," under Jedi,
4 it's limited to exchanges; whereas under header bidding,
5 anyone, including DSPs can buy; do you see that?

6 A I see it.

7 Q And then there are a bunch of other -- I'm not going to
8 go through every item in the chart about all the reasons why
9 buyers, if Google's acting as a pure buyer agent, it should
10 engage in header bidding, but we can read that together.

11 And then do you see the last one on the bottom of
12 this page is who controls the ad decision?

13 A Yes.

14 Q And under Jedi, the publisher controls it, but only via
15 Google; do you see that?

16 A Yes.

17 Q But under header bidding, the publisher gets to control
18 the ad decision; right?

19 A I don't know if that's factually accurate, but I see it
20 here.

21 Q Okay. It's in a memo with your name on it; right?

22 A Yes.

23 Q Okay. If we turn to the next page, at the top of the
24 page it says: "Due to the lower margin, better access and
25 the ability to leverage first-party cookie, we see many

1 buyers embrace header bidding"; do you see that?

2 A I see it.

3 Q And then if you turn to the top of the next page ending
4 in Bates stamp 391, there's a heading "competitive thread";
5 do you see that?

6 A Yes.

7 Q It says: "Provided we be allowed and willing to
8 compete via the header bidding layer itself, that player
9 would have full insight into our bidding and control under
10 deciding what ad to show"; do you see that?

11 A Yes.

12 Q And as of the time this document was written, Google
13 had full insight into the bidding, and Google had control
14 over deciding what ad to show; correct?

15 A Into our bidding here is -- I don't fully understand
16 what this statement here is trying to say.

17 Q Okay. So you don't understand the statement.

18 A little bit further, there's a frequently asked
19 question, FAQ; do you see that?

20 A Yes.

21 Q And it says, Question 2: "Why do publishers want
22 header bidding?" Do you see that?

23 A Yes.

24 Q And there are three reasons listed: Higher yields,
25 full control under the ad decision, publishers get ultimate

1 control over the auction, and more simplicity; do you see
2 that?

3 A Yes.

4 Q And below that it says: "Header bidding can be
5 considered an evolution of auction systems. While in
6 traditional auction systems, multiple exchanges are called
7 until the impression is filled (daisy chain). Header
8 bidding calls multiple buyers simultaneously and effectively
9 conducts the first-price auction with the bids. This
10 happens before other ad server calls. In addition, it gives
11 publishers control in how they call various bidders"; do you
12 see that?

13 A Yes.

14 Q And then on the top of the next page: "In other words,
15 the publisher has total control over the auction conducted
16 through header bidding"; do you see that?

17 A I see it.

18 Q And then Question 3 says: "Why does header bidding
19 lead to increased publisher revenue"; do you see that?

20 A Yes.

21 Q And it says: "While self-competition is quoted in the
22 industry as the reason for increased publisher revenue, this
23 is not true"; do you see that?

24 A I see it.

25 Q It says: "Header bidding runs a first-price auction

1 amongst all bids so there can be no self-competition"; do
2 you see that?

3 A I see it.

4 Q And below that it says: "Instead, the increased
5 revenue from header bidding comes from actual bids competing
6 with line items versus average bids"; do you see that?

7 A Yes.

8 Q Do you agree with that statement in the memo with your
9 name on it?

10 A I disagree.

11 Q You disagree. Okay.

12 And then Question 4 is: "Why do buyers want
13 header bidding?" And here we've got five different reasons
14 why buyers want header bidding; right?

15 A I see it.

16 Q And one reason is lower margin; correct?

17 A Yes.

18 Q Another reason is better access; correct?

19 A Yes.

20 Q And the third reason is transparent pricing; correct?

21 A Yes, I see it.

22 Q Fourth reason is direct access to first-party cookies;
23 correct?

24 A I see it.

25 Q And the fifth reason is it's not subject to the

1 exchange buy-side policy; do you see that?

2 A Yes.

3 Q And then it says: "While it's true that today's header
4 bidding implementation have some drawbacks, sophisticated
5 buyers still stand to gain by buying directly on header
6 bidding"; do you see that?

7 A I see it.

8 Q And if you turn to the page ending in Bates stamp --
9 the next page, 393. It says -- under the appendix it says:
10 "Options to improve current designs." It says:
11 "Improvements to Jedi"; is that right?

12 A I'm not sure.

13 Q It says: "In order to have a competitive offering, we
14 need to offer buyers, Number 1, a way to buy inventory at
15 lower margin"; do you see that?

16 A Yes.

17 Q Number 2: "Competition with reservation line items";
18 do you see that?

19 A Yes.

20 Q Number 3: "Allowing the actual bid to compete, meaning
21 not against an average expected bid, but actual bids to
22 compete in head-to-head competition"; do you see that?

23 A I see it.

24 Q And Number 4: "More signals"; do you see that?

25 A Yes.

1 Q And then under that it says: "Publishers will want
2 these three things: Transparent first-price auction,
3 payment through Google, and reliable reservations handling;"
4 do you see that?

5 A I see it.

6 Q And then it says: "This could be done in a number of
7 ways." And B says: "Allow all buyers to compete with line
8 items via Enhanced Dynamic Allocation"; do you see that?

9 A Yes.

10 Q And it was true that, as of this time, all buyers were
11 not allowed to compete with line items via Enhanced Dynamic
12 Allocation; isn't that right?

13 A It's a sell-side implementation. I do not know if that
14 was correct or not.

15 Q And then if you look at the top of the next page, it
16 says: "The cost is the margin that we charge today, which
17 we believe is not sustainable anyway since we expect buyers
18 to move to head bidding in the future"; do you see that?

19 A I see it.

20 Q And then if you look under strategic considerations at
21 the bottom of that page, it says: "If the conclusion is
22 that exchanges are dispensable and DFP is no longer a way to
23 improve access to inventory, is there merit for still being
24 in the platform business? DFP/AdX used to be the only
25 combination to compete against direct sold"; do you see

1 that?

2 A I see it.

3 Q Do you see here that Google is concerned that header
4 bidding not only threatens its exchange business, but also
5 its platform business or DFP?

6 A I do not understand what is in here to the extent I can
7 interpret it right now.

8 Q Let me turn to PTX 363, which, again, is part of our
9 stipulation.

10 THE COURT: Any objection?

11 MS. RHEE: I'm sorry, what --

12 MS. WOOD: 363.

13 MS. RHEE: No objection.

14 THE COURT: All right. It's in.

15 (Plaintiffs' Exhibit Number **363 admitted into evidence.**)

16 BY MS. WOOD:

17 Q Okay. Are you familiar with what ACM meetings are?

18 A Yes.

19 Q Those are high-level executive meetings at Google;
20 correct?

21 A Correct.

22 Q And this is an ACM meeting about header bidding. And
23 if we can turn for efficiency to page ending in Bates stamp
24 629.

25 A Yes.

1 Q You see the title of that slide that was presented to
2 senior executives at Google is: "Header Bidding Benefits
3 Pubs and Advertisers, Challenges DRX"; do you see that?

4 A I see that that was prepared for an ACM; I do not know
5 if it was presented or not.

6 Q Okay.

7 A I just wanted to --

8 Q You see the title: "Header Bidding Benefits Pubs and
9 Advertisers, Challenges DRX"?

10 A Yes.

11 Q What is DRX?

12 A Combination of DFP and AdX.

13 Q Okay. So header bidding benefits Google's customers,
14 pugs and advertisers, but it challenges Google's DFP and
15 AdX; is that how you interpret that headline?

16 A Yes.

17 Q Okay. And it talks about the benefit to Google's
18 customers, it says: "Publishers make more money"; do you
19 see that?

20 A Yes.

21 Q And do you see that buyers get to secure access to
22 supply? Do you see that?

23 A Yes.

24 Q And those are presented as pros and the reason why
25 header bidding benefited Google's customers; right?

1 A Why header bidding benefited pubs and advertisers.

2 Q Pubs and advertisers are Google's customers; correct?

3 A I don't know if I would agree with that completely.

4 Q Okay. You don't think pubs and advertisers are

5 Google's customers?

6 A No. That part I agree.

7 Q Okay. You just don't agree that header bidding

8 benefits them?

9 A Yes.

10 Q Okay. So you disagree with the information that was

11 presented to the ACM?

12 A I disagree with that statement that header bidding

13 unequivocally would benefit publishers and advertisers.

14 Q Okay. And then under the pros for publishers, it says:

15 "Universal competition with real-time pricing"; do you see

16 that?

17 A I see it.

18 Q And do you see it says: "Captures incremental demand."

19 That's another benefit for publishers; right?

20 A Yes.

21 Q And it also says: "No Google policies, no Google rev

22 share"; right?

23 A Yes.

24 Q Do you remember what Google's sell-side rev share was

25 at this time?

1 A 20 percent.

2 Q Okay. And then on the buy-side, it says: "Pros for
3 the buyers include control the supply chain, reduce
4 dependence on Google decision logic"; do you see that?

5 A Yes.

6 Q That was viewed as a pro to your buy-side customers;
7 right?

8 A Yes.

9 Q Okay. And then below that, it says: "100 percent
10 user/placement visibility"; right? Do you see that?

11 A Yes.

12 Q It says: "Real-time pricing increases win rate"; do
13 you see that?

14 A Yes.

15 Q Do you agree that an increased win rate is a good thing
16 for advertisers?

17 A Under some conditions.

18 Q Okay. So there are conditions where losing is a good
19 thing for advertisers? Losing something they bid on and
20 want is a good thing for them?

21 A Yes.

22 Q Okay. And so you don't agree that an increased win
23 rate is good for advertisers, contrary to what the document
24 suggests?

25 A It's good under some conditions.

1 Q Okay. And then it says: "Rapid, ungoverned
2 innovation"; do you see that?

3 A Yes.

4 Q So one of the pros that was listed for buyers of
5 participating in header bidding is rapid, ungoverned
6 innovation; do you see that?

7 A I see it.

8 Q Do you disagree with that pro as well?

9 A I do not know what is -- what is referred here as
10 rapid, ungoverned innovation.

11 Q Okay. And then there's a red box at the bottom that
12 says: "DRX challenges creates a new auction outside our
13 decision logic policies or fees"; do you see that?

14 A Yes.

15 Q And it says -- the last one is: "Could become a
16 competing ad platform"; do you see that?

17 A Yes.

18 Q Again, the concern was that header bidding was not only
19 a competitive challenge for AdX, but also for DFP; correct?

20 A Again, I do not work on the sell-side, so I cannot
21 interpret beyond what I see here in the slides.

22 Q So let's look at the page ending in Bates stamp 631.
23 And this summarizes the response to header bidding, which
24 Google began to call Project Jedi; correct?

25 A Yes.

1 Q And did you work on Project Jedi?

2 A No.

3 Q Let me show you what we'll mark for identification as
4 PTX 401.

5 MS. WOOD: It is subject to our stip.

6 THE COURT: Any objection to 401?

7 MS. RHEE: No, Your Honor.

8 THE COURT: All right. It's in.

9 (Plaintiffs' Exhibit Number **401 admitted into evidence.**)

10 BY MS. WOOD:

11 Q This is a Jedi++ header bidding response options dated
12 October 27th, 2016; do you see that?

13 A Yes.

14 Q Does this refresh your recollection as to whether you
15 worked on Jedi++ and the response options to header bidding?

16 A No, I did not work on building Jedi++ header bidding
17 response.

18 Q Did you work on experiment results that related to
19 Jedi?

20 A Yes.

21 Q Okay. So you worked on Jedi to that extent; right,
22 sir?

23 A Not on the design of Jedi, but on some experiments
24 related to Jedi.

25 Q Okay. So you worked on Jedi; right?

1 A Aspects of Jedi, yes.

2 Q Okay. Let's turn to your work on Jedi.

3 MS. WOOD: Can we pull up PTX 402. Again, subject
4 to our stip.

5 THE COURT: Any objection?

6 MS. RHEE: No, Your Honor.

7 THE COURT: All right. It's in.

8 (Plaintiffs' Exhibit Number 402 admitted into evidence.)

9 BY MS. WOOD:

10 Q This is an email dated October 28th, 2016.

11 Did you happen to note the previous document was
12 dated the day before, October 27th, 2016?

13 A I see it.

14 Q Okay. And this is a series of emails in this
15 October 2016 time frame. And I'd like you to turn first to
16 the page ending in Bates stamp 469.

17 A Okay.

18 Q And do you see in the middle of the page in bold it
19 says AI.

20 Is that a shorthand term for action item?

21 A Yes.

22 Q It says: "AI model profit losses if we decrease AdX
23 rev share"; do you see that?

24 A Yes.

25 Q Does that refresh your recollection that you worked on

1 Jedi to model profit losses if Google reduced the AdX rev
2 share or take rate?

3 A No, I do not agree with that characterization.

4 Q Does this refresh your recollection that you did, in
5 fact, model profit losses based on AdX reducing its rev
6 share?

7 A Yes.

8 Q Okay. If we turn to the front of the document, do you
9 see the first -- the top email, latest in time, is from
10 Michael Hopkins.

11 Who was that?

12 A Based on my current recollection, he was a product
13 manager on the sell-side at that time.

14 Q Okay. And do you see that your email -- you were on
15 this email at the time; right? It's the last one listed.

16 A Yes.

17 Q On the last line listed, I mean.

18 And he said: "Notes from the meeting have been
19 added and pasted below"; do you see that?

20 A Yes.

21 Q And then there's a reference to a slightly earlier
22 Jedi++ header bidding response meeting on October 13th,
23 2016; do you see that?

24 A I see it.

25 Q Okay. And then there's the expression that I've come

1 to learn, TLDR. Remind us what that means.

2 A Amounts to a summary.

3 Q It amounts to a summary?

4 A Yes.

5 Q Okay. And it says -- the summary is: "Header bidding
6 is growing, and the use cases of header bidding are
7 expanding. Header bidding solutions, plus price competition
8 from emergent ad servers and SSPs pose a competitive threat
9 to DFP"; do you see that?

10 A Yes.

11 Q And it says: "A competitive threat to DFP's value prop
12 of being a broad source of access to premium inventory"; do
13 you see that?

14 A Yes.

15 Q So, again, that's a reference to header bidding
16 threatening not only the ad exchange, but also the DFP;
17 right?

18 A I see what's written here, but I don't know much more
19 beyond that.

20 Q And do you see on the top of the page we were just
21 looking at, page 469, there's a bullet -- and, again, these
22 are notes from the meeting -- to "compete more aggressively
23 with other exchanges-DRX changes"; do you see that?

24 A Yes.

25 Q And the Number 1 note is: "Put pressure on companies

1 providing header bidding infra"; do you see that?

2 A Yes.

3 Q So Google was looking for ways to put pressure on
4 companies providing header bidding; do you see that?

5 A I see what is written here.

6 Q And companies providing header bidding included
7 exchanges that participated in header bidding; correct?

8 A Sorry. Can you repeat that question?

9 Q When it says companies providing header bidding, those
10 companies included ad exchanges that were participating in
11 header bidding; correct?

12 A I do not know that is the case.

13 Q Well, did you know that ad exchanges were participating
14 in header bidding?

15 A Yes.

16 Q Okay. And then it says: "Levers we could pull"; do
17 you see that?

18 A Yes.

19 Q And one of the levers Google could pull would be to
20 lower its AdX rev share to 9 to 14 percent; do you see that?

21 A Yes.

22 Q And then there's an action item there: "Model profit
23 losses if we decrease AdX rev share"; do you see that?

24 A Yes.

25 Q "Model increases in volume and analysis"; do you see

1 that?

2 A Yes.

3 Q And so the goal of that action item was to see that if
4 Google lowered its AdX rev share, would Google make up for
5 that revenue loss with additional volume; correct?

6 A Yes.

7 Q Okay. And then there's a reference to you. Are you
8 aware of any other Nirmal that worked on this project?

9 A I'm sorry?

10 Q Do you see your name, Nirmal?

11 A Yes.

12 Q Was there any other Nirmal that worked on this project?

13 A Not to my knowledge.

14 Q So it's reasonable that refers to you; right?

15 A Yes.

16 Q And it says: "Roughly revenue neutral, 10 to
17 15 percent drop in overall profit." And then: "Eisar" --
18 that's a reference to Eisar Lipkovitz; right?

19 A Yes.

20 Q And it says: "Green light to do all necessary
21 analysis"; do you see that?

22 A Yes.

23 Q And if we look down to the bottom of the same page,
24 there's a bullet point that says: "Prevent self-flooring";
25 do you see that?

1 A Yes.

2 Q And the subject being discussed is: "DBM" -- or
3 DV360 -- "plus GDN" -- which is Google Ads -- "would only
4 bid on queries that are known to come from ad server.
5 Essentially don't bid on header bidding queries"; do you see
6 that?

7 A I see it.

8 Q Do you remember that being discussed and that being an
9 action item for you?

10 A I recall discussing this.

11 Q Okay. And the goal was -- well, let's turn to the next
12 page ending in Bates stamp 470.

13 It says: "By only bidding on ad servers and not
14 bidding on header bidding queries, the effect in short term
15 would be to move a lot of rev to AdX and put pressure on HB
16 infra"; do you see that?

17 A I see it.

18 Q And the pressure on HB infra is putting competitive
19 pressure on companies and infrastructures that engage in
20 header bidding; correct?

21 A I'm not -- I think that's -- I have to guess what it
22 means here. It sounds reasonable.

23 Q And what Google's goal was to starve exchanges of an
24 access to buyers so that exchanges that were engaged in
25 header bidding would feel competitive pressure; correct?

1 A I disagree that that's a goal that Google took.

2 Q And if you turn back to the first page of the document,
3 in fact, wasn't that the overall goal of this meeting?

4 Look at the bottom of the first page, the goal was
5 to present options for mitigating growth of header bidding
6 infrastructure; do you see that?

7 A I see it.

8 Q And that header bidding infrastructure included the
9 exchanges that participated in header bidding; correct?

10 A Again, I do not know exactly what is referred to here
11 as header bidding infrastructure.

12 MS. WOOD: Let's move to document PTX 536 also
13 subject to our stip.

14 THE COURT: Any objection?

15 MS. RHEE: No objection, Your Honor.

16 THE COURT: All right. It's in.

17 (Plaintiffs' Exhibit Number 536 admitted into evidence.)

18 BY MS. WOOD:

19 Q This is a follow-up meeting just maybe 10 or 11 days
20 after the email we just saw on November 10th, 2016. Jedi++
21 header bidding response options; do you see that?

22 A I see it.

23 Q And if you can turn to the page that ends in Bates
24 stamp 364.

25 A Okay.

1 Q Do you see the chart on the left-hand side: "Results
2 in table are based on simulation full model"; do you see
3 that?

4 A Yes.

5 Q Do you know what that is?

6 A Auction simulations were used to generate that table.

7 Q And what were you simulating?

8 A Simulating the impact of the AdX and Google Ads margins
9 changing.

10 Q Okay. You were simulating what would happen if you
11 reduced, among other things, the AdX rev share; right?

12 A Yes.

13 Q Okay. And then do you see in the upper right corner in
14 light blue: "Sales feedback on impact of cutting rev
15 share"; do you see that?

16 A Yes.

17 Q First bullet point reads: "Would not help win new
18 business in head-to-head competition"; do you see that?

19 A I see it.

20 Q So the sales feedback was, you don't need to cut your
21 revenue share to win new business; is that right?

22 A I see what's written here, but I do not work on the
23 sell-side, so I cannot comment more.

24 Q Well, you worked on these simulations of what would
25 happen if there was a reduction in the sell-side rev share;

1 right?

2 A Yes.

3 Q Does that not constitute working on the sell-side?

4 A My role in this effort was limited to running those
5 simulations --

6 Q Okay.

7 A -- and sharing the results.

8 Q And it said: "Would not help open new inventory on
9 existing DRX pubs in existing market"; do you see that?

10 A I see it.

11 Q And then it says: "Discounts are being applied for top
12 pubs today, not seeing significant margin erosion"; do you
13 see that?

14 A I see it.

15 Q Let me show you what has been marked for identification
16 as PTX 460.

17 MS. WOOD: It is also subject to our stip.

18 THE COURT: All right. Any objection to 460?

19 MS. RHEE: No objection, Your Honor.

20 THE COURT: All right. It's in.

21 (Plaintiffs' Exhibit Number **460 admitted into evidence.**)

22 BY MS. WOOD:

23 Q And do you see, Mr. Jayaram, the bottom email is from
24 you dated November 11, 2016, which is the day after the
25 document we just saw in PTX 536.

1 You see this is an email from you to others,
2 including Mr. Lipkovitz, with the results of your auction
3 simulation; correct?

4 A Correct.

5 Q Okay. And do you see then if you turn to the second
6 page in the middle of the page, Mr. Lipkovitz writes at
7 11:15 p.m.: "It was a fascinating discussion today, but I
8 have a bunch of follow-up questions. Let's assume we have a
9 simple proposal where we just reduce margin on the sell-side
10 and do not attempt to move margin to GDN to compensate. We
11 go from 20 percent to 15 percent"; do you see that?

12 A Yes.

13 Q Okay. And then there's some other folks that are added
14 to the change, and then you say in your email at 12:35 a.m.:
15 "Please see the table below on the impact once DBM's" -- or
16 DV360's -- "markup is added. There is some improvement in
17 the metrics, but not a whole lot"; do you see that?

18 A I see it.

19 Q Okay.

20 MS. WOOD: Can I show the witness what's been
21 marked for identification as PTX 423.

22 THE COURT: Any objection?

23 MS. WOOD: That's also part of our stip.

24 MS. RHEE: No objection, Your Honor.

25 THE COURT: 423 is in.

1 (Plaintiffs' Exhibit Number 423 admitted into evidence.)

2 BY MS. WOOD:

3 Q And this appears to be a continuation of some of the
4 same subject as we just saw. And on November 14, 2016, on
5 the first page and about a third of the way down, you wrote:
6 "Regarding why DBM markup made a small change, part of the
7 reason is that we don't make up margins on DBM, so we lost
8 about 60 percent of DBM net revenue, the sell-side
9 component"; do you see that?

10 A I see it.

11 Q Okay. And, again, if you go to the page ending in
12 Bates stamp 043, this is that same chart we saw before; do
13 you see that?

14 A Yes.

15 Q And I want to just understand, the far left column
16 is -- the first percentage number is a reduction of the --
17 or a reflection of a proposed new AdX rev share; correct?
18 Of 15 percent.

19 A Yes.

20 Q That's what the 15 percent refers to.

21 And the 20 percent refers to a Google Ads rev
22 share; correct?

23 A Yes.

24 Q Okay. And so the figures that are reported to the
25 right of that show what happens if Google reduces the AdX

1 margin to 15 percent, the net -- gross and net revenue to
2 Google will go down, but publisher payout will go up;
3 correct?

4 A In this simulation, yes.

5 Q Okay. And then do you see if Google reduces the AdX
6 rev share to 10 percent, and the GDN rev share goes up to
7 25 percent, Google will still lose in both gross and net
8 revenue, but the publisher will earn an even higher payout;
9 correct?

10 A Yes.

11 Q Okay. Let's turn to PTX 858.

12 MS. WOOD: I can indicate this is also on the
13 defense exhibit list as DTX 559.

14 THE COURT: Then I assume there's no objection?

15 MS. RHEE: No objection, Your Honor.

16 THE COURT: It's in.

17 (Plaintiffs' Exhibit Number 858 admitted into evidence.)

18 BY MS. WOOD:

19 Q Do you see that this is a document dated May 9, 2018
20 titled "Demand Elasticity on AdX Web Publishers"?

21 A Yes.

22 Q And then if you look under the objective of the
23 document, it says: "Explore the impact on revenue, payout
24 and profit on AdX for different AdWords buy-side margins";
25 do you see that?

1 A Yes.

2 Q And, again, AdWords is another term for Google Ads;
3 right?

4 A Yes.

5 Q Okay. What role did you play in connection with this
6 document?

7 A Based on my recollection, I was not involved in the
8 preparation of this document.

9 Q Okay. Do you see the page ending in 247?

10 A Yes.

11 Q And do you see the proposed margin match query revenue
12 profit and payout columns? Were those materials that you
13 worked on while you were part of the buy-side team at
14 Google?

15 A Materials?

16 Q Pardon?

17 A Sorry. Could you repeat your question?

18 Q Yes. Does looking at this chart refresh your
19 recollection that you played a role in connection with this
20 simulation that was being run for buyers on AdX?

21 A It does not.

22 Q Who is Ajay Bangla?

23 A Ajay Bangla was a data scientist working on my team.

24 Q So he worked for you?

25 A Yes.

1 Q And were you a manager of the gTrade team at this time?

2 A For most of the gTrade team, yes.

3 Q Okay. Were you Mr. Bangla's manager?

4 A Yes.

5 Q So while you didn't prepare this directly, this was
6 prepared by someone who was working directly for you?

7 A Yes.

8 Q Okay. Do you have any reason to doubt the accuracy of
9 the material presented in PTX 858?

10 A I haven't reviewed it closely enough to know for sure.

11 Q Okay. Let me turn to PTX 737.

12 MS. WOOD: Also subject to our stip.

13 THE COURT: Any objection?

14 MS. RHEE: No objection, Your Honor. Other than
15 at the bottom here, an article is being referenced. So,
16 again, with the caveat that we would ask that that not be
17 introduced for the truth of the matter asserted.

18 THE COURT: Right. But it still gives context to
19 the discussion, so it's staying in.

20 MS. RHEE: Absolutely, Your Honor, which is why
21 there's no objection ultimately to the document.

22 THE COURT: Right. It's in.

23 (Plaintiffs' Exhibit Number **737 admitted into evidence.**)

24 BY MS. WOOD:

25 Q Okay. At the time that you were modeling Google's

1 proposed reductions and take rates, were you aware that the
2 competition, including exchanges like Rubicon, were charging
3 a margin of 13 percent, whereas Google had a margin of
4 20 percent?

5 A I was not.

6 Q All right. We can move on to another document then.

7 Do you recall there came a time when, in part
8 because of the advent of header bidding, Google was
9 considering shifting to a first-price auction?

10 A Yes.

11 Q And you would agree with me that header bidding was
12 conducted on a first-price auction basis; correct?

13 A That is my understanding.

14 MS. WOOD: Okay. Let's pull up PTX 815. This is
15 also part of our stip.

16 THE COURT: Any objection?

17 MS. RHEE: No objection, Your Honor.

18 THE COURT: It's in.

19 (Plaintiffs' Exhibit Number **815 admitted into evidence.**)

20 BY MS. WOOD:

21 Q Do you recognize PTX 815 is a document you prepared? I
22 can tell you based on the metadata that you are listed as
23 the e-author of this document.

24 A I recognize this document because it came up in my
25 deposition on this matter, but I did not recognize it

1 outside of that setting.

2 Q Okay. Do you have any reason to doubt this is a
3 document you prepared?

4 A I do not.

5 Q Okay. Great.

6 And at the top you write "privileged and
7 confidential" in all caps; do you see that?

8 A I see it.

9 Q You're not actually requesting legal advice in this
10 document; are you?

11 A No. This email was not sent out.

12 Q Okay. And you write: "Hi Sissie and Sagnik."

13 Who is Sissie?

14 A Sissie was vice president at Google at the time.

15 Q And who was Sagnik?

16 A Sagnik was also vice president.

17 Q Were any of them lawyers?

18 A No.

19 Q And you write: "As part of the migration to AdX
20 first-price auctions, we are giving up a significant
21 advantage Google has retained over the past few years,
22 namely last look"; do you see that?

23 A I see it.

24 Q You go on to write: "Last look allowed us to beat
25 header bidders and other remnant line items as long as our

1 bid value is above the header bidder, HB bid"; do you see
2 that?

3 A Yes.

4 Q And that was a true statement at the time; correct?

5 A It was based on imperfect information. So my
6 understanding of this has changed since the time I wrote
7 this document.

8 Q Okay. So you don't agree with what you wrote anymore?

9 A That's correct.

10 Q Okay. And how many times have you met to prepare for
11 your testimony with Google's counsel?

12 A About six times, I would say.

13 Q Okay. And then if you see in the middle of that
14 paragraph, you write: "Note that \$5" -- you give an
15 example, and you say: "Note that \$5 is AdWords' maximum
16 bid, while HB's \$3 is their actual willingness to pay, so
17 this dynamic has provided a significant advantage to
18 AdWords"; do you see that?

19 A I see it.

20 Q And, again, AdWords is a reference to Google Ads;
21 correct?

22 A Yes.

23 Q Okay. And then in the third paragraph down, you said:
24 "The two most common reasons to give up last look are, A,
25 it's perceived as unfair in the market"; do you see that?

1 A Yes.

2 Q Was that a true statement at the time?

3 A That was my understanding at the time as a buy-side
4 engineer.

5 Q Okay. And you wrote: "We have to give this up at some
6 point"; do you see that?

7 A That was my opinion at that time.

8 Q Okay. And then you write: "The \$3 that the publisher
9 tells us is the header bidder is not actually true. This is
10 some boosted price that the publisher uses to price AdX
11 demand"; do you see that?

12 A Yes.

13 Q And then you write: "Case B is supposedly prevalent,
14 and publishers should have less incentive to do this in the
15 first-price world without last look"; do you see that?

16 A Yes.

17 Q And then going onto the next paragraph, in the middle
18 of that paragraph you write: "A more problematic issue is
19 that if this boost continues to exist in the first-price
20 world, header bidders will have a significant advantage over
21 Google demand"; do you see that?

22 A I see it.

23 Q And then you write in the next paragraph: "AdWords" --
24 meaning Google Ads -- "and DBM" -- meaning DV360 -- "demand
25 could be significantly disadvantaged during Quarter 4 if

1 these boosts continue to exist"; do you see that?

2 A Yes.

3 Q "Or get manipulated in ways that end up being
4 suboptimal for Google demand"; do you see that?

5 A Yes.

6 Q And were all of these reasons why you, on the buy-side,
7 supported a move to first-price auctions at that time?

8 A Moving to first-price auctions was a sell-side
9 decision, not mine.

10 Q So the buy-side had no impact -- input whatsoever into
11 the decision to move to a first-price auction?

12 A The buy-side provided the inputs, but the decision to
13 actually change the auction mechanism is completely on the
14 sell-side.

15 Q Okay. But buy-side had input; right?

16 A Yes.

17 Q And I'm asking you, on behalf of the buy-side, was
18 Google's buy-side supportive of the move to a first-price
19 auction?

20 A I was supportive of the move.

21 MS. WOOD: Okay. So let's show you PTX 857.

22 THE COURT: Any objection to 857?

23 MS. WOOD: This is also on the defendant's list as
24 798, I would note.

25 MS. RHEE: No objection, Your Honor.

1 THE COURT: All right. Then it's in.

2 (Plaintiffs' Exhibit Number 857 admitted into evidence.)

3 BY MS. WOOD:

4 Q Again, you are listed as the e-author of this document.

5 And do you see the title is "AdX/AdMob First-Price
6 Bidder For Perf" -- P-E-R-F -- do you see that?

7 A Yes.

8 Q What was the purpose of this document?

9 A I prepared this document to provide an explanation of
10 how the first-price bidder would work for potentially a
11 committee that would be looking into whether I should get
12 promoted.

13 MS. WOOD: I'm sorry. Can you read that back?

14 (The record was read as requested.)

15 MS. WOOD: Okay.

16 BY MS. WOOD:

17 Q And so you prepared the document in connection with a
18 possible promotion, but what you were looking at was how a
19 first-price bidder would operate; is that what you're
20 saying?

21 A I was trying to provide a very simple illustration of
22 how it would work for people who are not really familiar
23 with this space.

24 Q Okay. And so in the background section, you say:

25 "Display advertising consists of three major stakeholders:

1 Sellers; publishers, such as New York Times; buyers;
2 advertisers, such as Pepsis; and ad exchanges," which you
3 liken -- you say: They're akin to stock exchanges in that
4 they connect buyers to sellers; do you see that?

5 A Yes.

6 Q So do you think ad exchanges are buy-side only tools?

7 A No.

8 Q Okay. And you talk, about in the middle of the page,
9 the header bidding auction originated a few years ago;
10 right? You're setting up the subject of your discussion;
11 right? Do you see that?

12 A Yes, I see it.

13 Q And if you turn to page 2 of the document, you write:
14 "A big question here was how we should" -- "was how should
15 the AdX auction winner be compared to the header bidding
16 auction winner"; do you see that?

17 A Yes.

18 Q And you write: "For many years, AdX used what is
19 called the last-look mechanism, where if the AdX auction
20 winner bids higher than the header bidding bid, that
21 advertiser will win, and they have to pay at least the
22 header bidding bid"; do you see that?

23 A Yes.

24 Q So as I understand it, you get a header bidding auction
25 that runs on the publisher's web page or through some

1 wrapper; correct?

2 A Yes.

3 Q And that header bidding auction comes up with a
4 price; is that right?

5 A Yes.

6 Q And through last look, as long as AdX can match it, AdX
7 gets the bid, not the other exchanges; is that right?

8 A Not entirely.

9 Q Well, what you wrote here was: "For many years, AdX
10 used this mechanism, where if the AdX auction winner bids
11 higher than the header bidding bid, that advertiser will
12 win, and they have to pay at least the header bidding bid."

13 That's what you wrote here?

14 A That's right.

15 Q And is what you wrote here accurate?

16 A Not entirely. As I mentioned, this was for an audience
17 that was unfamiliar with this area, so I wasn't getting into
18 all the cases involved.

19 Q Okay. But what you wrote here you thought was an
20 appropriate description based on your knowledge, maybe it
21 didn't get into various nuances, but this was not
22 inaccurate, you wouldn't have written something down that
23 you viewed to be inaccurate; would you?

24 A As I said, my only knowledge of how the header bidding
25 price was used has changed over time and --

1 Q Okay. It's changed over time as you've met with
2 counsel multiple times; correct?

3 A No. I said the same thing during my deposition, if I
4 recall.

5 Q Okay. You prepared with your counsel before your
6 deposition; correct?

7 A I did.

8 Q Okay. Now, at the time you wrote this sentence here,
9 did you mean to be inaccurate?

10 A No.

11 Q Okay. Good.

12 And then you say: "This mechanism has been
13 considered as unfair in the industry in favor of AdX
14 buyers"; do you see that?

15 A Yes.

16 Q And then if you look in the bottom, in the paragraph
17 that begins "consequently"; do you see that?

18 A The highlighted part? Which part? Sorry.

19 Q Do you see the paragraph that begins "consequently"?

20 A Yes.

21 Q Okay. And the last sentence of that paragraph reads:
22 "In either case, AdX will give up last look. I.e., the
23 header bidding bid cannot, in any way, factor in the bids
24 computed by Google buyers"; do you see that?

25 A Yes.

1 Q And do you recall that Google had to, or was willing
2 to, give up last look in order to persuade market
3 participants to participate in Exchange Bidding, which was
4 then renamed to Open Bidding?

5 A No.

6 Q You're not aware of that?

7 A Yes.

8 Q All right. I'm going to show you -- do you recall
9 working on Project Poirot?

10 A Yes.

11 Q And you submitted a declaration in this case where you
12 talked about your work on Project Poirot; did you not?

13 A Yes.

14 MS. WOOD: Okay. I'd like to pull up PTX 1545
15 which is subject to the stip between the parties.

16 THE COURT: 1545, any objection?

17 MS. RHEE: No objection, Your Honor.

18 THE COURT: All right. It's in.

19 (Plaintiffs' Exhibit Number 1545 admitted into evidence.)

20 MS. WOOD: And just for context, let me pull up
21 PTX 402 just as a refresher. It's one we looked at earlier,
22 but I just want for context.

23 MS. RHEE: I'm sorry, what's that PTX?

24 MS. WOOD: 402.

25 MS. RHEE: Thank you.

1 BY MS. WOOD:

2 Q Do you remember we looked at this document, which was
3 October 28th, 2016, some action items following a meeting
4 about header bidding and Exchange Bidding; do you remember
5 that?

6 A Yes.

7 Q Okay. And in the bottom of page 3 ending in Bates
8 stamp 469, we talked about the line: "Prevent
9 self-flooring. DV360 and Google Ads would only bid on
10 queries that are known to come from an ad server,
11 essentially won't bid on header bidding queries"; do you
12 remember that discussion earlier?

13 A Yes.

14 Q And then it said: "Effect in short term would be to
15 move a lot of rev to AdX and put pressure on header bidding
16 infrastructure"; do you remember that generally?

17 A Yes.

18 Q Okay. So turning now back to 1545 with that context in
19 mind, do you recall that just a few days later, maybe a
20 week, you started running an experiment on domains that
21 Google expected used header bidding?

22 A I recalled running this experiment.

23 Q Okay. And so what you were looking for, you were
24 looking to find exchanges that used header bidding.

25 Why were you looking for exchanges that used

1 header bidding?

2 A We wanted to better understand incrementality of the
3 inventory that we were buying. So it was for analysis
4 purposes.

5 Q Okay. And so you write -- and the domains you're
6 talking about there, those are websites that are running
7 header bidding; right?

8 A Yes.

9 Q And those also would include exchanges that were
10 running header bidding; correct?

11 A Not in the entirety.

12 Q And also the Court has heard testimony about wrappers
13 or third-party providers that provide header bidding
14 solutions; correct?

15 A Yes.

16 Q And all three of those are part of the header bidding
17 infrastructure; correct?

18 A Again, the infrastructure, I don't know how it is used
19 in this document. They are all participants in header
20 bidding.

21 Q Okay. So there are three different types of
22 participants in header bidding. There are the publishers
23 themselves, the exchanges, and then also header bidding
24 wrappers; correct?

25 A Yes.

1 Q And you would consider all of them to be loosely part
2 of the header bidding infrastructure; correct?

3 A Again, I do not know how to define that header bidding
4 infrastructure term or how it's used in the documents here.

5 Q Okay. Without that term, you would agree with me,
6 there are ways to implement header bidding?

7 A No.

8 Q Okay. I'll move on. I think you've already made the
9 point.

10 So you were -- a week after the meeting we just
11 discussed, it was all about trying to find ways to combat
12 header bidding, you're starting an experiment, and you say:
13 "We are starting an experiment today on just the domains
14 that we suspect use header bidding, and we will run this for
15 a couple of days. This should be much smaller an impact";
16 do you see that?

17 A I see it.

18 Q Okay. And so below that, what is the -- what are you
19 experimenting with as you run this experiment?

20 A I need a few seconds to --

21 Q Sure.

22 A -- try to remember this experiment. I only have a
23 vague recollection at this time.

24 So, if I recall -- and it's been several years
25 since I ran this -- we tried to see if DBM does not buy on

1 certain domains, what would be the overall change to DBM's
2 impression and revenue as a way of measuring incrementality
3 of those supply paths.

4 (Reporter interrupted for clarification.)

5 THE WITNESS: Supply paths.

6 MS. WOOD: Supply paths.

7 BY MS. WOOD:

8 Q And so if we go to the page ending in 145, who was
9 Mr. Shodjai at this time, Payam Shodjai?

10 A Payam was a product management director at this time
11 for DV360 or DBM.

12 Q Okay. And he writes on October 28th, 2016, again,
13 right about the date of the meeting we looked at earlier
14 where we're talking about -- Google's talking about ways to
15 combat header bidding, Mr. Shodjai writes: "I'd like to
16 better understand the revenue impact of all this before we
17 move forward. A 1 percent experiment to stop buying on
18 third-party exchanges could actually result in millions of
19 dollars of lost revenue per day depending on how much shifts
20 to AdX, so it's not a trivial decision"; do you see that?

21 A Yes.

22 Q Okay. And then you write back at 1:58 p.m. on the same
23 day: "To clarify, we only want to run a .1 percent
24 experiment on all cross-exchange. Even if we lose all this
25 money, we're looking at 7,000 a day. We can shut this one

1 down on Monday. That way we will have three days of data
2 for about 20,000 revenue hit"; do you see that?

3 A Yes.

4 Q And you write: "The 1 percent is only on the domains
5 AdX team identifies as HB domains"; do you see that?

6 A Yes.

7 Q So you have the AdX team identify what the header
8 bidding domains were, and then you experimented by just
9 turning off the funnel of DBM purchases on those exchanges;
10 correct?

11 A On that .1 percent traffic.

12 Q Okay. And then you write: "This will start once we
13 get the list. We should run this longer, but the expected
14 impact is also a lot smaller depending on the size of the
15 domain list"; correct?

16 A Yes.

17 Q All right. So you're basically cutting off supply to
18 header bidding domains for this -- for the portions that are
19 subject to your experiment; correct?

20 A For the small traffic experiment, yes.

21 Q Okay. And then now let's go back to the first page
22 where you report the results.

23 And based on the results you see for all domains,
24 you see impressions go down by 35 percent; do you see that?

25 A Yes.

1 Q And revenue goes down by 47.94 percent; correct?

2 A Yes.

3 Q And then for all domains in sheet, impressions go down

4 by 40.89 percent; correct?

5 A Yes.

6 Q And revenue goes down by 46.19 percent; correct?

7 A Yes.

8 Q And then HB domains, that goes down by 30.13 percent;

9 correct?

10 A Yes.

11 Q And the revenue goes down by 34.48 percent; correct?

12 A Yes.

13 Q And then you have the last line of HB domains in

14 Americas; do you see that?

15 A Yes.

16 Q And that goes down by 31.02 percent in impressions, and

17 35.30 percent in revenue; is that right?

18 A Yes.

19 MS. WOOD: Okay. Let's turn to PTX 478. This is

20 also subject to our stip.

21 THE COURT: Any objection to 478?

22 MS. RHEE: No, Your Honor.

23 THE COURT: All right. It's in.

24 (Plaintiffs' Exhibit Number **478 admitted into evidence.**)

25 BY MS. WOOD:

1 Q So if you look, this is an update on header and
2 Exchange Bidding a few months later in March of 2017.

3 A I see it.

4 Q And if you look on the page with Bates stamp 431.

5 A You said 431?

6 Q Just 431. It's also up on the screen if that's
7 helpful.

8 And this document summarizes: "In November, we
9 presented DBM" -- or DV360 -- "stopping to buy
10 cross-exchange, leads to approximately 34 percent impression
11 loss"; do you see that?

12 A Yes.

13 Q And then it says: "For HB domains" -- over on the
14 right-hand side -- "DBM" -- or DV360 -- "wins back only
15 11 percent on AdX of the loss of the HB domains, 89 percent
16 loss"; do you see that?

17 A Yes.

18 Q And then it says: "This would mean 33 percent loss of
19 overall impressions to DBM or DV360 advertisers for the
20 header bidding domains"; do you see that?

21 A Yes.

22 Q Okay. Was that part of the experiment you conducted in
23 November?

24 A No. Hold on. Sorry.

25 This was part of the experiment we conducted.

1 Q Okay. You're sure?

2 A Yes.

3 Q Okay. Because you initially said no, so I just want to
4 make sure.

5 A I just -- I misunderstood your question.

6 MS. WOOD: Okay. Let's pull up PTX 545.

7 THE COURT: Any objection to 545?

8 MS. RHEE: No objection, Your Honor.

9 THE COURT: All right. It's in.

10 (Plaintiffs' Exhibit Number 545 admitted into evidence.)

11 BY MS. WOOD:

12 Q So this is an email a few months later where you
13 start -- where Poirot is fully launched; do you see that?

14 A Yes.

15 Q And you write in the middle of the page: "Poirot was
16 launched fully on July 19th." And that would be July 19th,
17 2017; correct?

18 A Correct.

19 Q And so it says: "In exchanges running non-second-price
20 auctions, we now modify fixed CPM/DBM bids to win
21 impressions cheaper when possible"; do you see that?

22 A Yes.

23 Q So you knew at the time that Project Poirot was
24 implemented that header bidding auctions ran on a
25 first-price basis; correct?

1 A Yes.

2 Q Okay. And Poirot was designed to target exchanges
3 running non-second-price auctions; correct?

4 A Poirot ran on all the exchanges.

5 Q It says: "In exchanges running non-second-price
6 auctions, we modify DV360 bids"; correct?

7 A That's correct.

8 Q So Poirot was designed to modify DV360's bids into
9 exchanges running non-second-price auctions, right?

10 A Yes.

11 Q And at the time Google launched Poirot, Google knew
12 that header bidding auctions were first-price auctions, not
13 second-price auctions; correct?

14 A Yes.

15 Q Okay. And Google knew that running the Poirot
16 algorithm would result in more DV360 spend going to AdX and
17 away from other exchanges; correct?

18 A Yes.

19 Q And if you see here, it says: "AdX's share of DV360
20 spend has increased from 43 percent to 48 percent"; do you
21 see that?

22 A Yes.

23 Q And it says: "DV360 spend on AdX increased by
24 approximately 9 percent"; do you see that?

25 A Yes.

1 Q And it says: "DBM" -- or DV360 -- "spend on non AdX
2 decreased by approximately 10 percent"; do you see that?

3 A Yes.

4 Q And it also says that "exchange CPMs dropped by close
5 to 10 percent"; do you see that?

6 A Yes.

7 Q And CPMs are the price that publishers get for their
8 inventory; right?

9 A It's the cost-per-thousand impressions.

10 Q Okay. And so by running the Poirot algorithm, the
11 prices that publishers get for their inventory dropped by
12 close to 10 percent; correct?

13 A No.

14 MS. WOOD: Okay. Let me pull up what's been
15 marked for identification as PTX 588. It is subject to our
16 stip.

17 THE COURT: Any objection to 588?

18 MS. RHEE: No, Your Honor.

19 THE COURT: All right. It's in.

20 (Plaintiffs' Exhibit Number **588 admitted into evidence.**)

21 BY MS. WOOD:

22 Q This is an email from you to Tobias Maurer and Payam
23 Shodjai in March of 2018; do you see that?

24 A Yes.

25 Q And you wrote: "In the past, we have tried running

1 experiments where we turned off DBM or DV360 buying on known
2 header bidding requests"; do you see that?

3 A Yes.

4 Q And that's what we saw earlier; correct?

5 A Correct.

6 Q It said -- you write: "Interestingly, we didn't win
7 these impressions back on AdX, possibly due to publisher
8 floors. Publishers tend to have higher floors on AdX, which
9 is why DBM" -- or DV360 -- "ends up winning on other
10 exchanges"; do you see that?

11 A Yes.

12 Q And you're aware at some point Google imposed Unified
13 Pricing Rules so that publishers couldn't put a different
14 floor on AdX; are you aware of that?

15 A Yes.

16 Q And you go on to write: "This is one big problem for
17 the AdX team to try fixing so that more of the DBM buying
18 will switch to AdX"; do you see that?

19 A Yes.

20 Q And then Mr. Maurer -- or previously Mr. Maurer had
21 written: "We already flagged concerns with header bidding
22 back in 2016. The discussion back then led to sensible
23 changes in EB." Meaning Exchange Bidding; right?

24 A Yes.

25 Q And that was Google's alternative header bidding

1 product; correct?

2 A Yes.

3 Q It says: "The inception of Demand Product, as well as
4 multiple initiatives in DBM to combat the effect of header
5 bidding, such as first-price auction protection"; do you see
6 that?

7 A I see it.

8 Q And it also -- Mr. Maurer also writes in the paragraph
9 above that: "Header bidding exists as a reaction for
10 publishers to them feeling that DFPs Enhanced Dynamic
11 Allocation does not allow for real-time competition with
12 network buyers"; do you see that?

13 A Yes.

14 Q And then at the bottom of the page, Mr. Shodjai writes:
15 "Agree, this is broken. The problem isn't so much that
16 DBM" -- or DV360 -- "is buying header bidding inventory, the
17 problem is that header bidding exists." And then there's a
18 little smile emoji; do you see that?

19 A Yes.

20 Q Okay. If you turn to the next page of the document,
21 Mr. Bellack writes on March 16th: "FYI, I think you know
22 this, but I am told regularly that DBM" -- or DV360 -- "is
23 the top buyer on every other exchange, so a huge chunk of
24 publisher header bidding revenue is Google demand going
25 outside our ecosystem and then coming back in via

1 third-party exchanges or header bidding"; do you see that?

2 A I see it.

3 MS. WOOD: Okay. So let's turn to page --

4 PTX 605, again, subject to our stip.

5 THE COURT: Any objection to 605?

6 MS. RHEE: No objection, Your Honor.

7 THE COURT: All right. It's in.

8 (Plaintiffs' Exhibit Number **605 admitted into evidence.**)

9 BY MS. WOOD:

10 Q And do you see this is email exchanges between you and
11 Jonathan Bellack who worked on the sell-side; is that right?

12 A Yes.

13 Q And these are dated May 10th, 2018, just after the
14 emails we just saw from March; correct?

15 A Sorry. Can you repeat that question?

16 Q Just orienting you to the time.

17 These emails are being exchanged in May -- early
18 May of 2018, and we just saw emails being exchanged in March
19 of 2018; is that right?

20 A Okay. Yes.

21 Q Okay. And, again, the concern that's being discussed
22 in this email is the fact that because of header bidding,
23 DV360 is buying more on exchanges other than AdX; right?

24 A The fact that DV360 is buying more on third-party
25 exchanges because of header bidding? Was that your

1 statement?

2 Q What is being discussed in this document is Google's
3 concern that due to the rise of header bidding, a lot of
4 DV360 spend is going to third-party exchanges and not being
5 spent on AdX; correct?

6 A I do not recall this email thread at this point, so I
7 need to read through to answer that question.

8 Q Well, we just saw -- the email we just saw in PTX 588
9 talked about the problem of DV360 buying on other exchanges
10 and not buying on AdX; right? Isn't that what we just read?

11 A Yes, in that email we did.

12 Q Okay. And so here in PTX 605, you were writing --
13 Mr. Bellack is talking about this problem. He says in the
14 bottom of the first page: "Intuitively we know that moving
15 a dollar from DBM" -- or DV360 -- "to third-party exchange
16 to DV360 to AdX gets us the 20 percent rev share we didn't
17 have before, so it should deliver a ton"; right?

18 A I see it.

19 Q That's just simple math; right? When AdX wins the
20 DV360 impression, AdX gets 20 percent; and when a
21 third-party exchange gets the impression, AdX doesn't
22 collect its sell-side rev share; right?

23 A Yes.

24 Q Okay. And so the problem Google is facing is, how can
25 we get more DV360 buy-side spend on AdX than on these

1 third-party exchanges; correct?

2 A I see what is being discussed here.

3 Q Okay. And then you write, you say: "Max, Nitish and I
4 looked at what happens if DBM" -- meaning DV360 -- "entirely
5 stops buying on third-party exchanges as a thought exercise.
6 I'll summarize the observations and get back"; do you see
7 that?

8 A Yes.

9 Q And does that refresh your recollection that you and
10 Mr. Loubser and Mr. Korula all got together and thought
11 about, well, why don't we just stop having DV360 bid on
12 third-party exchanges?

13 A No.

14 Q Okay. And, again, this is in contrast to Google Ads,
15 where Google Ads is restricted on what it can bid on
16 third-party exchanges; correct?

17 A Google Ads is restricted --

18 Q Okay.

19 A -- on third-party exchanges.

20 Q And so here, the thought experiment you were referring
21 to was an experiment where DV360, Google's other buy-side
22 tool, would also just stop bidding on third-party exchanges;
23 right?

24 A It was a thought exercise.

25 Q It was a thought exercise.

1 It was a thought exercise at the very time that
2 Poirot was being launched whereby DV360 was lowering bids
3 systematically on exchanges that did not run second-price
4 auctions; correct?

5 A Poirot launched well in advance of this email.

6 MS. WOOD: Let's look at PTX 860.

7 THE COURT: Any objection?

8 MS. RHEE: If the Court will just --

9 MS. WOOD: Oh, it's actually already in.

10 MS. RHEE: Oh, well, there you go.

11 THE COURT: That's right. Okay.

12 BY MS. WOOD:

13 Q I won't spend too long on this because it is already in
14 evidence.

15 But do you recognize this as Poirot 2.0, a summary
16 in August of 2018 of how effective Google was in reducing
17 DV360 spend on third-party exchanges?

18 A No, that's not how I would characterize this document.

19 Q All right. Regardless of how you characterize the
20 document, let's look at the data the document shows.

21 Do you see on the second page of the document,
22 683?

23 A Okay.

24 Q Do you see in the middle of the page the chart that has
25 exchange, revenue, revenue, net revenue?

1 A Yes.

2 Q And do you see after third-party exchanges, the net
3 revenue after budget adjustments is down 14.4 percent?

4 A Yes.

5 Q Okay. And do you see the AdX and AdSense net revenue
6 after budget adjustments is up 7.29 percent?

7 A Yes.

8 Q Okay. And then if you look at the results per
9 exchange, it says: "Impact on major exchanges aggregated by
10 all DBM traffic"; do you see that?

11 A Yes.

12 Q So Google was keeping track of how this was hurting
13 other exchanges; right?

14 A That's not how I would characterize it.

15 Q Okay. Google was certainly keeping track of the
16 negative revenue impact felt on other exchanges due to the
17 implementation of Poirot; correct?

18 A I would characterize it trying to measure the potential
19 impact on exchanges.

20 THE COURT: I'm sorry. Can you repeat that?

21 THE WITNESS: We are trying to measure the
22 potential impact on different exchanges.

23 BY MS. WOOD:

24 Q Well, Poirot was already running; right? So there
25 wasn't potential; correct?

1 A This table is not for Poirot; it's for the current
2 launch that is being discussed here.
3 Q A new version of Version 2.0 of Poirot?
4 A Yes.
5 Q And do you see here, it says, for AppNexus, revenue
6 would be down 31.4 percent based on this exercise?
7 A Yes.
8 Q And Casale Media, is that another term for Index
9 Exchange?
10 A Yes.
11 Q And do you see their revenue would be down
12 26.5 percent?
13 A Yes.
14 Q And Rubicon, that's another exchange; right?
15 A Yes.
16 Q And their revenue would be down 22.3 percent?
17 A Yes.
18 Q BidSwitch, their revenue would be down 18.4 percent?
19 A Yes.
20 Q OpenX, that's another exchange; right?
21 A Yes.
22 Q And do you see that OpenX revenue on the top of the
23 second page would be down 42 percent?
24 A Yes.
25 Q And PubMatic, do you see their revenue would be down

1 26.4 percent?

2 A Yes.

3 Q And then there's some exchanges here where the revenue
4 impact is positive; do you see that?

5 A Yes.

6 Q Can you tell me the market share of those exchanges
7 where the revenue is positive?

8 A I do not know sitting here today.

9 Q Do you know if they were major competitors to Google in
10 the ad exchange market?

11 A I do not know.

12 MS. WOOD: Let me show you what has been marked as
13 PTX 734 subject to our stip.

14 THE COURT: Any objection to 734?

15 MS. RHEE: No objection, Your Honor.

16 THE COURT: All right. It's in.

17 (Plaintiffs' Exhibit Number **734 admitted into evidence.**)

18 BY MS. WOOD:

19 Q So this is a document a few months later in March of
20 2019 also on the subject of Poirot. And I'd turn your
21 attention to the page ending in Bates stamp 596.

22 A Okay.

23 Q You see the email dated February 28th, 2019?

24 A February 28th, 2019, yes.

25 Q Okay. And you see the -- in all caps "privileged and

1 confidential"?

2 A Yes.

3 Q Do you see any request for legal advice in this email?

4 A Not -- nothing that I can see here.

5 Q Okay. And you write: "We have to work out a few
6 things." And if you look at the bottom bullet point, you
7 write: "Poirot currently generates margins by shifting
8 inventory to AdX outcome of Poirot"; do you see?

9 A Yes.

10 Q So you knew that an outcome of Poirot was to shift
11 inventory to AdX; correct?

12 A Yes.

13 Q And you write: "So charging for it and losing Poirot
14 adoption means losing some of this. If we do this after AdX
15 first-price migration" -- that's what 1P migration means;
16 right?

17 A Yes.

18 Q -- "this drawback goes away"; do you see that?

19 A I see it.

20 Q "Because after AdX shifts to a first-price auction, AdX
21 can't have a justification for imposing a different bidding
22 algorithm on other exchanges because AdX, too, would be
23 offering a first-price auction"; right?

24 A I disagree with that statement.

25 MS. WOOD: Okay. Let's look at PTX 897.

1 THE COURT: Any objection to 897?

2 MS. RHEE: No objection, Your Honor.

3 THE COURT: All right. It's in.

4 (Plaintiffs' Exhibit Number **897 admitted into evidence.**)

5 BY MS. WOOD:

6 Q The Trade Desk. The Trade Desk was a client of AdX on
7 the buy-side; correct?

8 A I do not know all the clients that AdX has. I assume
9 that statement is correct, though.

10 Q You've heard of The Trade Desk?

11 A Yes.

12 Q Of course; right?

13 A Yes.

14 Q It's one of the biggest competitors to DV360; correct?

15 A They are one of many competitors, yes.

16 Q And you understood that even though The Trade Desk was
17 a competitor to DV360, it was also a client of the AdX ad
18 exchange; right?

19 A That is my understanding.

20 Q Okay. So the bottom email from Duke Dukellis writes:
21 "Sam, so with TTD" -- that's a reference to Trade Desk;
22 right?

23 A TTD refers to Trade Desk, I think.

24 Q Yes?

25 A I think that is right. I'm not 100 percent sure.

1 Q That's their ticker symbol; is that right?

2 A I don't know.

3 Q Okay. "So with TTD going to header bidding, where are
4 we with direct access at a lower rate?" And then Mr. Amini
5 writes -- and he copies you; do you see that? He says plus
6 Nirmal?

7 A I see it.

8 Q Okay. And he says -- I'm reading the last sentence of
9 Mr. Amini's email. "It seems that Trade Desk, TTD, is
10 spending 30 percent to 40 percent with AdX now, whereas
11 DV360 is 75 percent with AdX"; do you see that?

12 A Yes.

13 Q Were you aware at this time that DV360 was spending
14 75 percent of its advertiser spend on Google's own AdX ad
15 exchange product?

16 A That number seems higher than what I have in mind.

17 Q Okay. But that's the number that Mr. Amini wrote in
18 this email; correct?

19 A Yes.

20 Q And you don't recall correcting him; right?

21 A No.

22 Q And you -- then Mr. Amini writes: "If TTD spend share
23 on AdX drops further, it makes it harder to explain
24 75 percent DV360 spend on AdX to external clients"; do you
25 see that?

1 A I see it.

2 Q So there was a concern that Google had about DV360 as a
3 neutral buyer on all exchanges when 75 percent of spend of
4 DV360 is on AdX, whereas only 30 to 40 percent of Trade Desk
5 spend is on AdX; correct?

6 A I see what Ali has written here, but I wouldn't
7 characterize it as a Google concern.

8 Q Let me show you what's been marked for identification
9 as PTX 929.

10 THE COURT: Any objection to 929?

11 MS. RHEE: No objection, Your Honor.

12 THE COURT: All right. It's in.

13 (Plaintiffs' Exhibit Number **929 admitted into evidence.**)

14 BY MS. WOOD:

15 Q And do you see this is an email from Casper
16 Verhoofstad.

17 Who was that?

18 A A product manager on DV360.

19 Q Okay. And he writes to you and Mr. Ahsan Maani; do you
20 see that?

21 A Yes.

22 Q And he also labels the email privileged and
23 confidential; do you see that?

24 A Yes.

25 Q And do you see any requests for privilege legal advice

1 here?

2 A I see that he has copied a lawyer here, but I don't see
3 any specific questions.

4 Q In fact, Google was trained -- Google employees were
5 trained to copy a lawyer and put privileged and confidential
6 on sensitive business topics; right?

7 A No, I wouldn't say that.

8 Q You don't recall being trained that if you have a
9 sensitive business topic, you should copy a lawyer and put
10 them in the to line so that it would end up on a privilege
11 log and not need to be produced?

12 A No, I do not recall that.

13 Q You don't remember that training.

14 You do recall Communicate With Care training;
15 correct?

16 A I have some vague recollection of Communicate With Care
17 training that I've taken in the past.

18 Q And do you recall that as part of your Communicate With
19 Care training, you were trained to copy lawyers on sensitive
20 business communications and write privileged and
21 confidential?

22 A No, that's not how I remember the training.

23 Q Okay. If you look at the last -- next-to-last
24 paragraph of Mr. Verhoofstad's email, he writes: "I feel
25 that for opt LIs we are generally safe, as the bids we

1 submit are query-specific."

2 Do you know what that's a reference to?

3 A So I think this is referring to whether the bids are
4 changing from auction to auction. The query here refers to
5 auctions.

6 Q Okay. And then he writes: "However, it is not
7 100 percent clear to me what happens to Poirot bids
8 optimized fixed." And then he writes: "IIUC." Do you know
9 what that means?

10 A If I understand correctly.

11 Q It says: "If I understand correctly, Poirot factors
12 are exchange cross advertiser and daily updated. Meaning
13 advertisers" -- I think the word should be may -- "figure
14 out the adjustment factor is daily exchange level and not
15 query-specific." Do you see that?

16 A Yes.

17 Q Were Google's advertiser customers of DV360 told that
18 the Poirot optimizations were taken at the exchange level
19 and not at the query level?

20 A I do not know exactly what was communicated to
21 advertisers in that regard.

22 MS. WOOD: One final quick topic, Your Honor. I
23 know we're up against the break.

24 BY MS. WOOD:

25 Q Do you recall being interviewed in November 2023 about

1 your practices with -- related to communicating by chats?

2 A I don't remember the exact timelines. I remember
3 talking about chats.

4 Q Okay. And do you remember -- and I don't want you to
5 go into any communications you had with Google's lawyers,
6 but do you remember telling Google's lawyers that you did
7 not use chats for business purposes?

8 MS. RHEE: As long as that caveat remains, which
9 is not to the substance of --

10 MS. WOOD: Correct.

11 MS. RHEE: Thank you, Your Honor.

12 THE COURT: All right.

13 MS. WOOD: Do you want me to repeat the question?

14 THE WITNESS: Yes, please.

15 BY MS. WOOD:

16 Q So don't tell me anything you and your lawyers
17 discussed other than the answer to the following questions.

18 Did you tell Google's counsel that you did not use
19 chats for substantive business purposes?

20 A What I remember telling Google lawyers is that my
21 regular use of chats was for logistical discussions.

22 Q Okay. But you, in fact, did use chats for substantive
23 business purposes; correct?

24 A As I mentioned, even though my regular use of chats was
25 for logistical purposes, I suspect there are some

1 substantial chats in there as well.

2 THE COURT: I'm sorry. You said for logistical
3 purposes?

4 THE WITNESS: Yes. Just coordinating with the
5 teams and so on and so forth.

6 THE COURT: But not for anything substantive?

7 THE WITNESS: That was my regular use of chats,
8 Your Honor. But I -- I likely did have some substantive
9 chats in there as well.

10 BY MS. WOOD:

11 Q So you did use chats for substantive business purposes?
12 Without characterizing how often you did or did not, you
13 agree with me that you did use chats for substantive
14 business purposes; correct?

15 A Yes.

16 Q And did you turn history on against the manual
17 default -- I mean the automatic default of history off,
18 every single time that you used a substantive chat for
19 business purposes?

20 A No, I did not.

21 MS. WOOD: Okay. I'd like to show PTX 1014.

22 THE COURT: Any objection to 1014?

23 MS. WOOD: It is also subject to our stip.

24 MS. RHEE: No objection, Your Honor.

25 THE COURT: All right. It's in.

1 (Plaintiffs' Exhibit Number 1014 admitted into evidence.)

2 BY MS. WOOD:

3 Q And I can represent to you that you are included in the
4 metadata for this document.

5 Do you see in the bottom of the page it says:

6 "Keeping the notes limited due to sensitivity of the
7 subject"; do you see that?

8 A I see it.

9 Q Were you advised, as part of Communicate With Care, to
10 keep notes limited when subjects were sensitive?

11 A As I mentioned, I do not recall the exact details of
12 that training at this point.

13 Q Okay. And then it says: "Separate privileged emails
14 will be sent to folks to follow up on explicit AIs."

15 AIs refer to action items; correct?

16 A Yes.

17 Q Okay.

18 MS. WOOD: Your Honor, at this time I'll pass the
19 witness.

20 THE COURT: So we'll take our mid-morning break
21 until 11:30.

22 (A recess was taken.)

23 MS. WOOD: Just briefly, Your Honor. By agreement
24 with counsel, we -- the United States offers PTX 284 and
25 PTX 1539 in evidence pursuant to our stip.

THE COURT: All right. 284 and 1539 are also in evidence.

3 MS. WOOD: Thank you, Your Honor.

4 (Plaintiffs' Exhibit Numbers 284 and 1539 admitted into
5 evidence.)

6 THE COURT: Go ahead.

CROSS-EXAMINATION

8 BY MS. RHEE:

9 Q Not quite afternoon, but almost afternoon.

10 Mr. Jayaram, Jeannie Rhee representing Google,
11 and, unfortunately, you have to sit through more questions;
12 okay?

13 A Okay.

14 Q Okay. In your direct examination, you talked about
15 working on the buy-side; is that right?

16 A Yes.

17 Q And, specifically, are you in charge of the buy-side
18 engineering team?

19 A Buy-side engineering teams, yes.

20 Q Okay. And approximately how many people work on
21 buy-side engineering?

22 A I would say about 50 people.

23 Q And by educational training, Mr. Jayaram, are you a
24 data scientist?

25 A I started at Google as a data scientist.

1 Q Okay. And from your initial position as a data
2 scientist, how did you progress on the buy-side?

3 A I worked as a data scientist for a few years, and then
4 I started managing people who were working on buy-side
5 optimizations, and so I also grew as a manager and
6 eventually director.

7 Q And, Mr. Jayaram, do you have a Ph.D.?

8 A Yes, I do.

9 Q And where did you get it from?

10 A At Stanford University.

11 Q And what is your Ph.D. in?

12 A I did my Ph.D. in civil engineering.

13 MS. WOOD: I'm sorry, Your Honor. Could I have
14 that read back?

15 (The record was read as requested.)

16 BY MS. RHEE:

17 Q Now, you talked about how on direct examination,
18 amongst the buy-side products that you do engineering for,
19 that includes DV360 and what is now referred to as Google
20 Ads?

21 A That's correct.

22 Q Okay. And what ad formats can advertisers buy on using
23 both of those buy-side tools?

24 A Advertisers can buy on a variety of ad formats. It can
25 be .txt, image, video and also across all kinds of surfaces

1 like apps, web, TV, so on.

2 Q I'm going to just need you to keep your voice up so
3 everybody in the courtroom can hear you. Okay. I know
4 you're soft-spoken by nature, but you've got to keep it up.

5 A Okay.

6 Q Okay. Thank you.

7 Now, Mr. Jayaram, are you familiar with the term
8 open-web display advertising as those four words are strung
9 together in exactly that way?

10 A No, I am not.

11 Q And when is the first time you heard those four words
12 strung together in exactly that way?

13 A While preparing for trial.

14 Q Okay. What does the term -- breaking up those words
15 now.

16 What does the term "open web" mean to you if
17 you've heard that phrase, those two words together, before?

18 A To me, open web would potentially be something like a
19 website or app where people have free access to the content.

20 Q And what is the opposite of free access then based on
21 what you just said to us?

22 A Based on how I defined it, the opposite would be paid
23 access or a subscription access.

24 Q So by your understanding, is the Wall Street Journal,
25 for example, on open web?

1 A By my definition, my understanding is Wall Street
2 Journal uses a subscription model, so I wouldn't categorize
3 that as open web.

4 Q Now, using the next two words of this phrase, open-web
5 display advertising, what about display advertising? Have
6 you heard those two words together?

7 A Yes, I have.

8 Q Okay. And what does display advertising mean to you?

9 A To me, display advertising means advertising that
10 happens outside of Google's O&O properties.

11 (Reporter interrupted for clarification.)

12 THE WITNESS: Owned and operated properties.

13 BY MS. RHEE:

14 Q And again, Mr. Jayaram, for the benefit of the court
15 reporter and others, if you could just speak up; okay?

16 A Okay.

17 Q Great.

18 Now, Mr. Jayaram, for diving into many of the
19 tools and the optimizations that you worked on, let's just
20 level set.

21 What is the goal, from your perspective, of
22 Google's buy-side tools that you work on?

23 A As a buy-side engineer, my goal has always been to
24 build good, strong advertiser products that achieve the
25 goals and constraints that advertisers have set for us.

1 Q And, Mr. Jayaram, based on that answer, to what extent,
2 if any, are all ad opportunities equally valuable?

3 A Not all ad opportunities are equally valuable. It
4 would depend on the advertising product and the user, for
5 example. Someone advertising shoes would be more
6 interesting to a user who likes running, for example.

7 Q Now, you testified on direct examination that you have
8 been at Google for approximately 12 years now; did I hear
9 that right?

10 A Yes.

11 Q Okay. And in that approximately 12 years, how many
12 product optimizations or new features have you been involved
13 in on behalf of Google's buy-side tools?

14 A I've been involved in 200 to 250 product changes,
15 conservatively speaking.

16 Q And how, if at all, does your team -- you and your
17 team, decide what needs improvement with respect to Google's
18 buy-side tools?

19 A There are two ways it typically happens. First is we
20 hear from advertisers. If they want certain features,
21 certain offerings, then we will build those. The second
22 would just be ideas that are generated within Google by
23 folks who are working on these products. And, you know, if
24 we think that something that can improve advertiser
25 performance, we'll start working on it.

1 Q And going to that second category, ideas that are
2 generated, what, if anything, does your team do once there's
3 just an idea floating around?

4 A The first step is just to make sure the idea makes
5 sense. And that will involve lots of discussions,
6 hypotheticals, maybe even some analysis to understand if
7 this is feasible, whether it's going to help, and so on and
8 so forth.

9 Once that process is done and we want to move
10 forward, then the second step is to figure out how to -- how
11 to build the solution. And many times this is not
12 straightforward, it's not like the solutions that are
13 available in books. So it might take a matter of several
14 months sometimes to figure out how to solve these problems.

15 And once we figure that out, the next step would
16 be to build the algorithms out and test it. So we usually
17 run some small experiments to see how the features perform,
18 and if we look at the metrics and we are happy about it, we
19 will then roll it out to all of the traffic at that point.

20 Q Now, from the brainstorm phase through testing, do all
21 ideas pan out?

22 A No.

23 Q And what happens if an idea doesn't pan out through
24 that step-by-step approach that you just laid out?

25 A If we still think the idea had some merit but when we

1 run it we don't see a good performance, for example, we
2 would continue to understand why things aren't working. We
3 would try to iterate, see if we can improve, and get
4 something that we can roll out.

5 But, on occasion, that doesn't happen, and we may
6 have spent a lot of time with no substance, and we would
7 drop the idea at that point.

8 Q Now, when you were evaluating your controlled
9 experiments, what, if any, specific metrics do you try to
10 measure?

11 A We look at a suite of metrics. Of course we always
12 start with something like advertiser value. How many
13 conversions are they getting, how many clicks are they
14 getting. Whatever the advertiser ROI metric is, we would
15 look at it.

16 We would also look at metrics such as revenue to
17 publishers, to Google. We will sometimes look at other
18 metrics, too. For example, our -- is the product getting
19 better or worse in brand safety, or how many machines is
20 this launch using, and is that appropriate for a launch of
21 this size. So we have a whole slew of metrics we look at.

22 Q Now, one of the metrics that -- if I heard you
23 correctly, Mr. Jayaram, that you identified is Google
24 revenue; is that right?

25 A Yes.

1 Q Okay. And if one of your controlled experiments shows
2 or indicates that Google revenue will go down as a result of
3 that hypothesis or possible solution, what happens?

4 A The launch -- let's say the launch purpose is to
5 improve advertiser performance. We have had launches in the
6 past where advertiser performance improved and Google
7 revenue declined, and we have launched those.

8 Q Why is that?

9 A Yes. So the Google revenue that we can measure is
10 short-term Google revenue, and what we are really hoping to
11 do is build really good products that give excellent ROI for
12 advertisers that will bring in more budgets in the future,
13 that way driving long-term revenue. So we are, many times,
14 willing to take a short-term revenue hit to improve
15 advertiser performance and make the product better.

16 Q Okay. So you remember being asked on direct
17 examination about some of those specific controlled
18 experiments that you ran, and in particular, I want to
19 direct your attention to PTX 324.

20 MS. RHEE: And if I could get Mr. Spalding's
21 assistance on that.

22 BY MS. RHEE:

23 Q Do you remember going over this with the government
24 during your direct examination?

25 A Yes, I do.

1 Q Okay. Now, just to level set, this particular
2 experiment, did it conduct the experiment with respect to
3 the entirety of what was then called GDN demand into an AdX
4 auction?

5 A Yes.

6 Q Okay. And when we talk about the entirety of what was
7 then referred to as GDN demand, did that demand exist only
8 with respect to so-called open-web display ads?

9 A No.

10 Q Okay. When you ran this controlled experiment about
11 the possible impact of removing GDN demand from the results
12 of the AdX auction, did that GDN demand include Google's own
13 owned-and-operated properties like search?

14 A Some of the attachment demand was included.

15 Q Okay. So is that a yes or a no?

16 A Yes.

17 Q Okay. Did that -- what was then referred to as GDN
18 demand, include apps?

19 A Yes.

20 Q Video?

21 A Yes.

22 Q And native search? I'm sorry, native ads?

23 A Yes.

24 Q And now I want to direct your attention to something
25 that was not focused on in the government examination. If

1 you could look at Item Number 2. And you see that this
2 experimentation writeup by you says: A large number,
3 70 percent, go unmatched. And you're referring to here
4 queries; is that right?

5 A Yes.

6 Q Okay. What does it mean that 70 percent of the queries
7 go unmatched? What was an observation that you put in with
8 respect to this particular experiment?

9 A Just to clarify, this was a simulation.

10 In this simulation, it says: "On the queries won
11 by GDN today, if GDN demand doesn't exist, then 70 percent
12 of that will go unmatched."

13 Q And, again, if I could have you just keep your voice
14 up, Mr. Jayaram.

15 And you just corrected me, and thank you for that.

16 What's the difference between a simulation and a
17 control experiment?

18 A In an experiment, we are making some changes to live
19 auctions, maybe a small fraction of it, and then observing
20 the different metrics.

21 In a simulation, we are just doing some
22 mathematical analysis without running those live auctions,
23 and it allows us to, you know, add additional constraints.
24 For example, this simulation was run on Bernanke holdback
25 data, as it lists in the top paragraph, which was not the

1 world AdX was in at the time.

2 Q Okay. And we'll talk about Bernanke a little bit
3 later.

4 MS. RHEE: So if we could pull that down.

5 BY MS. RHEE:

6 Q Now, you remember being asked on direct examination
7 about a -- an effort that was called AWBid or that came to
8 be called AWBid; is that right?

9 A Yes.

10 Q Okay. And some of the documents refer to it as
11 cross-exchange bidding; is that right?

12 A Yes.

13 Q And were you at Google when AWBid was first developed?

14 A Yes.

15 Q And I take it you worked on AWBid; is that right?

16 A I did.

17 Q And what capacity did you work on AWBid?

18 A I worked as a data scientist.

19 Q And what was your understanding, if you have one,
20 Mr. Jayaram, as to why Google, at least piloted or explored
21 the possibility of cross-exchange bidding for Google Ads
22 customers?

23 A Google buy-side is looking for ways to improve
24 advertiser performance as we've discussed. And AWBid was
25 being explored as a potential way to do that, generate

1 better performance for advertisers, if that's possible.

2 Q Now, to your knowledge, while you were there at the
3 initial start of AWBid, did advertisers ask Google to enable
4 bidding on third-party exchanges?

5 A No. Not based on my knowledge.

6 Q So was this one of those ideas in the category -- the
7 second category that you walked us through?

8 A Yes.

9 Q Now, if you can remember, Mr. Jayaram, how, if at all,
10 was Google's decision to explore cross-exchange bidding for
11 Google Ads' customers influenced by what the competitors
12 were doing at that time?

13 A I was not involved in all the discussions at the time,
14 but based on my recollection, there were discussions around
15 remarketing as an area which would benefit by -- through
16 cross-exchange buying. So some discussions were had on that
17 nature.

18 Q Now, why would it benefit Google Ads' advertisers, if
19 at all, to possibly integrate with third-party exchanges for
20 purposes of retargeting specifically?

21 A One thing we have seen with retargeting/remarketing is
22 that users tend to lose interest quickly, and so the sooner
23 we were able to show a product to the user, the higher
24 chance that they would purchase it. And by having access to
25 more inventory, the hope was that we would be able to get

1 the product across the user sooner.

2 Q Okay. So I now want to direct your attention to what
3 was shown to you in direct examination as PTX 278.

4 MS. RHEE: If I could get your assistance.

5 BY MS. RHEE:

6 Q And in particular -- well, first of all, Mr. Jayaram,
7 do you actually see yourself on this distribution?

8 A I do not.

9 Q Okay. Nevertheless, you were asked a series of
10 questions about this document, so I want to direct your
11 attention to the second full paragraph of the background.

12 MS. RHEE: And thank you, Mr. Spalding, for
13 blowing that up.

14 BY MS. RHEE:

15 Q And you see here, this paragraph ends with: "In fact,
16 most AWBid pubs" -- and that's publishers here; right?

17 A Yes.

18 Q -- "are using AdX along with other exchanges"; do you
19 see that?

20 A Yes.

21 Q What does that mean?

22 A That means publishers typically tend to use AdX, as
23 well as other exchanges, at the same time to sell their ad
24 inventory.

25 Q And then going to the last paragraph of this document

1 to implications --

2 MS. RHEE: Thank you, Mr. Spalding.

3 BY MS. RHEE:

4 Q -- you see underneath the last -- or the second-to-last
5 bullet point, the sub-bullet point talks about GDN possibly
6 being able to access walled-garden inventory, Facebook,
7 Yahoo, AOL -- is TWTR Twitter?

8 A I think that's right.

9 Q And MSN. Is that Microsoft?

10 A Yes.

11 Q Okay. Or pub inventory where AdX is not present; do
12 you see that?

13 A Yes.

14 Q At that point in time, were Facebook, Yahoo, AOL,
15 Twitter and Microsoft all competing for advertiser spending
16 budgets?

17 A Yes.

18 Q Okay. And was GDN able to access the inventory from
19 Facebook, Yahoo, AOL Twitter or Microsoft?

20 A Based on my knowledge on at least some parts of Yahoo,
21 and I'm not sure about Microsoft. But the rest, I don't
22 think -- I'm not sure.

23 Q So those competitors -- I just want to make sure I
24 understand your testimony, Mr. Jayaram.

25 Those competitors denied access to Google Ads'

1 customers; is that right?

2 A That is my understanding.

3 Q Okay. Now, turning to the actual work of AWBid, were
4 you directly involved in trying to take the idea of AWBid
5 and move it along the steps that you talked us through?

6 A Yes.

7 Q How long did that process take?

8 A It took about three -- three years.

9 Q And why did it take so long?

10 A AWBid was a really large-scale effort. It was the
11 first time AdWords was buying on third-party exchanges, and
12 there were lots of challenges with it. For starters, we had
13 to align with exchanges on policies, signals that will be
14 shared, and that process takes time.

15 Once that alignment was available, the next step
16 would be to build the pipes to integrate with exchanges, and
17 this was also a significant engineering effort that needed
18 to happen.

19 Once we had that integration, we started looking
20 at some live traffic, and a lot of non-forcing challenges
21 were seen at the time. This includes the latency
22 constraints that we had on exchanges, spam, fraud concerns,
23 advertiser performance concerns, brand safety concerns. So
24 we had to work through all of these constraints, build new
25 engineering solutions to deal with it. That took a long

1 time. And eventually when we were happy that we were able
2 to mitigate those issues, we felt good about advertiser
3 performance, that's when this product became -- was
4 launched, essentially.

5 Q In addition to everything that you just walked us
6 through, Mr. Jayaram, when you aligned with the exchanges,
7 did you also need to align with respect to billing?

8 A Yes. Billing has been a continuous area of discussion,
9 especially in the early days of AWBid when Google used to
10 have a certain estimate of how many impressions were served
11 and how much payment needs to be made. And the exchange had
12 its own estimate, and it was common for these estimates not
13 to line up. And so we had to work with exchanges to figure
14 out how to deal with what we called billing discrepancies,
15 and it took several years of discussion.

16 Q Now, why were there so many more challenges with
17 building integration with third-party exchanges for Google
18 Ads' customers in comparison with DV3, which has always been
19 able to allow its customers to bid on third-party exchanges?

20 A Yes. So while the DV3 and AdWords' products have
21 become more similar over the years, they were still very
22 different at the time.

23 DV360 was operating more or less as a pipe for
24 advertisers' bids to be sent to the exchanges. So
25 advertisers -- and the product that was being used at the

1 time was what was called fixed CPM product. Google didn't
2 do any optimization for them. Advertisers would say, hey,
3 my bid is \$2, just send it to all the exchanges, and we
4 would do it.

5 And in addition to that, a lot of spam issues and
6 brand safety issues -- we expected the product expected
7 advertisers to take responsibility for that on the DV360
8 side.

9 On the other hand, AdWords has always focused on
10 optimization. It's catered -- the products that were
11 predominant at the time were still focusing on conversions,
12 and Google was being relied on by advertisers to manage all
13 the issues, including performance, fraud, brand safety. And
14 so a lot of completely new systems needed to be -- needed to
15 be built for AdWords. So while we could use some of the
16 pipes that existed, a vast majority of the engineering had
17 to be redone for AdWords.

18 Q Now, when you talk about the engineering that had to be
19 done, was that engineering by Google or engineering by the
20 third-party exchanges or both?

21 A What I am referring to is predominately engineering by
22 Google. There likely was some work that also needed to be
23 done by exchanges.

24 Q Now, in terms of the engineering work that had to be
25 done by Google, I think you briefly mentioned something

1 about machine costs or machine resources.

2 What do you mean by machine costs or machine
3 resources?

4 A So when I am talking about machines, I'm referring to
5 the computers that run these algorithms to value the bids,
6 value the ads and come up with the right ad candidate.

7 Q Now, are we talking about a single machine like a
8 computer that's here in the courtroom, or are we talking
9 about something else?

10 A No. Clusters of computers, several thousands of them
11 that are needed for processing ad requests.

12 Q So insofar as there is only a finite number of these
13 machine clusters, why not just build more machine clusters
14 if you need the computing capacity?

15 A So one of the issues we had with AWBid, we still
16 continue to have with AWBid, is the presence of duplicate
17 calls for the same ad opportunity. So there's one ad
18 opportunity, but we get several auction calls for the same
19 ad opportunity.

20 What this means is even though there is only one
21 ad opportunity, we have to keep processing every independent
22 request, and it consumes our machines and this has made it
23 really hard for us to scale.

24 Now, could we just go and buy a whole bunch more
25 machines and start buying more? There are physical space

1 limits, so we cannot just buy more machines and put them
2 somewhere.

3 But, in addition, the machines are being used in a
4 very wasteful way, because there is true single ad
5 opportunity, but then we have -- we are processing the same
6 thing so many times.

7 So that's definitely been the biggest challenge
8 with machine cost management on AWBid.

9 Q So I want to now direct your attention to DTX 277,
10 which is called an AWBid update dated October 2015.

11 THE COURT: Any objection?

12 MS. WOOD: No objection.

13 THE COURT: All right. It's in.

14 (Defense Exhibit Number 277 admitted into evidence.)

15 MS. RHEE: If we could put that up on the screen.
16 Thank you so much.

17 BY MS. RHEE:

18 Q Now, let's start with page 3 of this document. And
19 just by helpful orientation, does this reflect here the
20 timeline you were walking us through where work on AWBid as
21 a concept kicked off in 2012; you see that?

22 A Yes.

23 Q And yet the first actual third-party exchange to try to
24 launch did not occur until 2015?

25 A Yes.

1 Q Okay. There are a bunch of interim steps along the
2 way.

3 What do those interim steps represent,
4 Mr. Jayaram?

5 A So once the work kicks off, as I said, we need to start
6 doing the integration work on the engineering side to start
7 getting some real traffic. So that's what we see around
8 May 2013. We have some traffic start to flow in.

9 In the 2013 to '14 window, this was extended to
10 six other exchanges. And throughout this period, there is
11 engineering work going on in parallel to solve all those
12 other problems that I called out earlier. And then we get
13 to this point in 2014 where we started an experiment where
14 on 1 percent of all this integrated AWBid exchanges we
15 started buying.

16 And then we have to do another round of
17 performance improvements, because now we finally know what
18 will happen to advertiser performance once they buy, and we
19 had to continue to make that better, ramp it up to
20 10 percent once we felt comfortable with the performance
21 that was in October of 2014, and after that, we were happy
22 with the performance for advertisers, it was launched in
23 2015.

24 Q So now, you see after the first OpenX and Rubicon
25 launches, the last entry here is OpenX, CCI and Casale

1 Media; do you see that?

2 A Yes.

3 Q And are those all additional third-party exchanges that
4 you sought to expand AWBid into?

5 A Yes.

6 Q So now let's direct your attention to page 23 of this
7 same October 2015 document. And you see the title of this
8 slide is called "Spam Issues"?

9 A Yes.

10 Q Okay. Now, going in reverse order, you see the entry
11 PulsePoint: "98 percent of clicks are spam in manual
12 review. Stopped bidding for now"; do you see that?

13 A Yes.

14 Q Could you explain to the Court what that sentence means
15 in translation for laypeople?

16 A So when AdWords started buying on PulsePoint, if we got
17 100 clicks through PulsePoint, 98 percent of them were
18 marked as spam in manual review.

19 Q What does manual review mean here?

20 A In this case, the spam team reviewed the clicks and
21 tried to understand if this was spam or it's actually a
22 genuine click, and the conclusion was that 98 percent of the
23 clicks were spam, which was of course really bad, and that's
24 why we stopped bidding on PulsePoint at the time.

25 Q Now, when you say Google's manual review team, what do

1 you mean by that?

2 A So Google has a team which is focusing on identifying
3 spam. They build the algorithms, they do the reviews, and
4 that's the team I'm referring to.

5 Q Okay. So now going to the next bullet point, Pubmatic,
6 and it says 70 percent of clicks are spam in manual review.

7 What does that mean?

8 A The same way we talked about PulsePoint. Even on
9 Pubmatic, 70 percent, which is, you know, the vast majority
10 of the clicks were identified to be spam.

11 Q So now the top of this slide talks about protections in
12 place. Before we walk through what those protections are,
13 who put those protections in place?

14 A So these protections were put in place both by the spam
15 team at Google, as well as the AWBid engineering team.

16 Q So both teams are Google teams; is that right,
17 Mr. Jayaram?

18 A Yes.

19 Q Okay. So if you could walk us very briefly and at a
20 high level what those protections are that one Google team
21 or another put in place.

22 A Without going into the bullets individually, like, one
23 of the projects we worked on was within certain exchanges,
24 in sort of, for example, not buying on entire exchange, we
25 said let's look at domains where the spam rates are high and

1 domains where they are not high, and then we will bid --
2 we'll continue to bid on the domains where the spam rates
3 are not high. So this was an engineering effort that was
4 kicked off.

5 The spam team continued to look for better signals
6 to detect spam, and that's what you see as some of the
7 projects listed there around BotGuard and so on.

8 The other project that we had to work on, too is
9 how do we deal with refunds once we detect that click was
10 spam. Usually it's not instantaneous, so --

11 Q I just want to interrupt.

12 Refunds to whom, Mr. Jayaram?

13 A To advertisers. So what happens is maybe there was a
14 click and the advertiser was charged for the click, but we
15 detected later that it was a spam click, so we want to
16 refund the money back to the advertiser, and so the process
17 needed to be instituted for that.

18 Q Now, let's go to the slide ending in 345 of the very
19 same AWBid update document of October 2015.

20 You see the title of this slide is "Challenge
21 Latency"?

22 A Yes.

23 Q Okay. And underneath it it says, as the first bullet
24 item: "Current timeouts. Rubicon, 50 percent. OpenX,
25 32 percent. Platform ID, 67 percent."

1 Can you explain to the Court what current timeouts
2 mean in the context of latency challenges?

3 A Yes. The exchanges give us a certain amount of time to
4 respond with a bid, and if we don't respond with a bid
5 within that period of time, then our bid will get thrown
6 away, it won't be factored in the auction. So that is what
7 we call as a timeout.

8 Q Now, underneath that, it says GPA timeouts, and Rubicon
9 is at 80 percent and OpenX is 72 percent.

10 What is a GPA timeout?

11 A GPA is a subset of the retargeting product we've talked
12 about.

13 What happens here is in sort of the advertiser
14 giving us an ad image or, you know, a different format that
15 they wanted to show, they would give us some of the products
16 that they advertise. And then in real time, based on the
17 user, we would try to construct the ad creative.

18 Q And when you say "you" here, who is the "you" that's
19 trying to construct the ad creative?

20 A The Google buy-side team.

21 So the Google buy-side team would try to construct
22 the ad creative in real time based on the user's product
23 interest.

24 So this process takes time, and that's why you see
25 compared to regular timeouts, which are really high, over

1 50 percent means half the bids are getting thrown away, the
2 GPA timeouts are really bad.

3 Q Notwithstanding these 2015 challenges, did the Google
4 buy-side team continue to work on improving AWBid?

5 A Yes.

6 Q And in the work after 2015 to continue to try to
7 improve AWBid, did you and your buy-side team of engineers
8 continue to confront spam issues?

9 A Yes.

10 Q Did the spam issues ever really go away?

11 A No.

12 Q Did you and your buy-side team continue to confront
13 latency challenges?

14 A Yes.

15 Q And did you and your buy-side team continue to pour
16 resources into trying to address these challenges,
17 nevertheless?

18 A Yes.

19 Q And, today, how many third-party exchanges does AWBid
20 bid into?

21 A AWBid bids into nearly 50 exchanges directly and
22 indirectly.

23 THE COURT: I'm sorry, how many?

24 THE WITNESS: Fifty. 5-0.

25 THE COURT: 5-0.

1 BY MS. RHEE:

2 Q And in terms of spend, do you know, roughly, how much
3 Google Ads' customers spend on third-party exchanges?

4 A On third-party exchanges, Google Ads spends about --

5 MS. WOOD: Objection, Your Honor, as to the time
6 period and whether we've been given discovery with respect
7 to that time period.

8 THE COURT: I sustain the objection.

9 Make it more specific.

10 BY MS. RHEE:

11 Q To your knowledge, what is the most current estimate of
12 how much Google Ads spends on third-party exchanges?

13 THE COURT: I don't think that's specific enough.

14 MS. WOOD: Objection, Your Honor. Same objection.

15 THE COURT: You must have this by year.

16 BY MS. RHEE:

17 Q If we could do it by the most current year,
18 Mr. Jayaram, if you know.

19 THE COURT: Well, again, whether that's 2022,
20 2023, 2024, we don't know.

21 BY MS. RHEE:

22 Q What is the most specific year estimate that you have?

23 A 2023.

24 Q Okay. And for 2023, if you know, Mr. Jayaram, how much
25 does Google Ads spend on third-party exchanges?

1 THE COURT: Let me stop for a second.

2 Is that a calendar year or business year? What is
3 Google's business year? Is it January to December?

4 BY MS. RHEE:

5 Q Mr. Jayaram, do you know?

6 A I'm referring to around December 2023. I have --

7 THE COURT: I'm sorry?

8 THE WITNESS: For December 2023, I have an
9 estimate.

10 BY MS. RHEE:

11 Q So this is January to December 2023?

12 A Oh, I'm talking about the actual run rate of AWBid.

13 So what I mean by that is if I look at how much
14 AWBid -- sorry, how much the third-party exchange spend was
15 in December and you roughly multiply that by 12, and so we
16 call that the annual run rate. That's the number I have.

17 MS. WOOD: Your Honor, I renewed the objection.

18 Obviously discovery was closed in December 2023. It was
19 just closed before that.

20 THE COURT: Sustained.

21 BY MS. RHEE:

22 Q Are you familiar, Mr. Jayaram, with a product feature
23 called Google Ad Connector?

24 A Yes.

25 Q And what is it?

1 A Google Ad Connector was a sell-side offering that
2 helped Google buyers get access to publishers who ran their
3 own auctions and essentially ad servers.

4 Q And how does that integration work?

5 A So the Google Ad Connector team bills out the publisher
6 integrations based on the unique specifications of the
7 publishers, and then buyers can build into this.

8 Q And do you know of examples of publishers that the
9 Google buy-side tools connected with directly using Google
10 Ad Connector?

11 A I recall Google Ad Connector being used to connect with
12 eBay and LinkedIn.

13 Q Notwithstanding at least some examples of household
14 names that use the product, has Google Ad Connector been
15 successful?

16 A In my assessment, Google Ad Connector was not
17 successful.

18 Q And in your assessment, why not?

19 A The product did not scale beyond a very small number of
20 publishers, and that was, in large part, driven by the
21 nature of signals we can get on these publishers.

22 Big publishers like eBay, LinkedIn, even
23 Pinterest, which was being explored, they have a lot of
24 user-generated content, and so far, Google Ads to be able to
25 buy into this, in order to ensure brand safety, and we need

1 to get better understanding of the content, we also need to
2 have a good understanding about the user to be able to value
3 ads. And this is the kind of information that the large
4 publishers were not necessarily willing to share.

5 Q And so at least in your estimation, is at least some
6 basis for the lack of interest because the largest
7 advertisers are not willing to share what?

8 MS. WOOD: Objection. Leading.

9 THE COURT: I think he just answered the question,
10 frankly.

11 MS. RHEE: Okay. Terrific, Your Honor. I will
12 move on.

13 BY MS. RHEE:

14 Q I want to now direct your attention to Project
15 Bernanke, which I believe you talked about in the context of
16 one of the launch experiments. Or, I'm sorry, one of the
17 simulations that the government walked you through; do you
18 remember that?

19 A Yes.

20 Q Okay. Now, what, if any, problem was Project Bernanke
21 trying to address?

22 MS. WOOD: Objection. Beyond the scope.

23 THE COURT: Well, we're allowing it. I mean, he's
24 a Google witness. Were you planning to call him in your
25 case?

1 MS. RHEE: I'm sorry, Your Honor?

2 THE COURT: Is this witness on your list as well?

3 MS. RHEE: Correct.

4 THE COURT: Remember, we're relaxing those rules.

5 But when he is your witness on direct, then you
6 can't be leading.

7 MS. RHEE: And I fully understand that, Your
8 Honor.

9 THE COURT: All right.

10 MS. WOOD: I would just also offer that Bernanke
11 is not a program that is at issue in the litigation anymore.

12 THE COURT: Well, if it's not relevant, there's so
13 much information already in this case, how much time were
14 you going to spend on this?

15 MS. RHEE: A very short amount of time, and I
16 think it's been talked about at least with respect to some
17 of the experts, Your Honor.

18 THE COURT: All right. I'm going to permit it.

19 BY MS. RHEE:

20 Q I believe the question before we had this exchange,
21 Mr. Jayaram, was: What, if any, problem was Project
22 Bernanke trying to address?

23 A Before Project Bernanke, we had this observation that a
24 large fraction of ad requests were going unfilled on ad
25 exchange, unfilled by both AdWords, as well as other buyers.

1 So we looked at it as potentially a missed
2 opportunity if we are not winning or if it is going
3 completely unmatched, and Bernanke was an effort kicked off
4 to understand this better and improve our bidding systems.

5 Q So if you remember back to that government PTX about
6 the simulation you ran where we looked at that note which
7 was 70 percent unmatched impressions or queries; do you
8 remember that?

9 A Yes.

10 Q And just by your answer, I just want to make sure we're
11 all on the same page, is that 70 percent of queries were won
12 neither by AdX nor anyone else based on your observations?

13 A No. That 70 percent number is specific to that
14 simulation. My recollection is the unmatched rate was
15 something around 50 percent at the time.

16 Q Okay. Thank you for that clarification.

17 MS. RHEE: And if I could now go to DTX 172, which
18 is the Project Bernanke launch presentation. And this is
19 2013.

20 THE COURT: Any objection to 172?

21 MS. WOOD: Just same objection on 401 and 403,
22 given the role of Bernanke and the litigation at this point.

23 THE COURT: I think, Ms. Rhee, I want you to make
24 me a proffer as to where you're going with this. Why is
25 this relevant to this case?

1 MS. RHEE: If you recall, Professor Ravi, for
2 example, Your Honor, talking about how in his rival
3 substitution analysis, his presumption and assumption was is
4 that there was a one-for-one, which is if AdX did not win
5 the impression, the rival exchange would win the impression,
6 or that a rival bidder would win the impression.

7 THE COURT: All right.

8 MS. RHEE: This project goes specifically to the
9 big middle, which is the unmatched queries where nobody won
10 and what Google did to try to address that.

11 THE COURT: All right. I'll allow it in for a
12 bit. 172 is in.

13 (Defense Exhibit Number 172 admitted into evidence.)

14 MS. RHEE: And I apologize. Of course the
15 incomparable Ms. Liu has reminded me, it's not the expert
16 opinion of Professor Ravi, but Weintraub, and that's my bad.

17 THE COURT: It's all right.

18 BY MS. RHEE:

19 Q Okay. You see what's now been admitted as DTX 172; do
20 you see that?

21 A Yes.

22 Q Who is this man, and why is his face on here?

23 A This is Ben Bernanke, the former fed chair. And, yeah,
24 one of my co-workers picked his name to be the name of the
25 project.

1 Q And why did one of your co-workers name the project
2 after this gentleman?

3 A Because you could say it was an honor of Ben Bernanke.

4 Q Okay. Let's go to the slide ending in 793.

5 And here do you see a summary slide of experiment
6 results that you ran on a Bernanke launch?

7 A Yes.

8 Q Okay. And did the results tell you with certainty what
9 the effects of Bernanke would be?

10 A We cannot tell with certainty.

11 Q Why not, Mr. Jayaram?

12 A Because what we do is we run a small experiment. So,
13 actually, we run two small experiments. One where we bid
14 without Bernanke; one where we bid with Bernanke. And then
15 what you see in the slide is, what is the difference in
16 various metrics between these two experiments. That gives
17 us a directional idea.

18 But let's say I launched this. What we expect is
19 that there will be a lot of reactions in the marketplace.
20 Some of the reactions might be from advertisers, some from
21 publishers, some from exchanges, and so we cannot predict
22 with certainty what would happen after we launched, but we
23 can get a directional sense.

24 Q Okay. And so we've skipped ahead a bit because we
25 haven't really explained to the Court, what was Project

1 Bernanke, and what did you actually create in order to
2 address the problem you identified of approximately
3 50 percent unmatched ads?

4 A Yes. Initially we thought, hey, maybe this is because
5 we don't have the right ads to show, so we tested that
6 hypothesis and found it was not the case.

7 Then the Court is looking into our bidding
8 algorithm into exchange, how we bid into the exchange on
9 behalf of our advertisers. And we found some inefficiencies
10 there. Specifically, GDA had a business margin of
11 14 percent at the time, and prior to Bernanke, essentially
12 the algorithm was forcing to achieve that type of margin on
13 every bid request, which was a very highly constrained way
14 of doing things.

15 What Bernanke does is, it relaxes that constraint.
16 It does not change GDS margin of 14 percent, that stays the
17 same, but it gives the algorithm a bit more flexibility to
18 get -- to achieve that in average, and the flexibility helps
19 us generate better performance for advertisers.

20 Q And as a result of that, at least with respect to this
21 controlled experiment, did the project improve match query
22 rates?

23 A In this experiment, we saw 11.8 percent increase in the
24 match queries.

25 Q And did that also correspond to an increase in

1 advertising spend?

2 A Yes. As it shows in the slide, a 9.2 percent increase
3 in advertising spend.

4 Q Okay. And then on the publishers' side, what, if any,
5 results did you see at least from this controlled experiment
6 in terms of publisher revenue?

7 A Publisher revenue increases by 8 percent in this
8 experiment.

9 Q Okay. And in the middle, you see here Google profit
10 goes up; is that right?

11 A Yes. Google profit increases by 12 percent.

12 Q How does Google profit go up when you said that the
13 constraint within Project Bernanke was not to take a margin
14 hit?

15 A That's right. So this profit is not because we
16 increased the margin; this profit is coming from the
17 original queries that were matched as a result of Bernanke.

18 Q So it's a Google revenue boost where there are just
19 more matched queries; is that -- do I have that right?

20 A That's right.

21 Q Okay. Now, was Bernanke exclusive just to what's been
22 referred to in this case as open-web display inventory?

23 A Again, I don't know how to define the term, but
24 Bernanke applied on all the traffic web, as well as apps.

25 Q Okay. Now, I want to turn to another project, and,

1 again, it's been at issue at least with respect to experts
2 in this case.

3 Are you familiar with a project called Project
4 Bell?

5 A Yes.

6 Q Okay. And what was the problem or the issue that
7 Project Bell was trying to solve for?

8 A So before Project Bell, what we had observed was this
9 concept of multiple calls for the same ad opportunity
10 through AdX.

11 So let's say that we only have one unique ad
12 opportunity and the -- we would first receive a call, and --
13 usually with a high floor -- floor price, and if there was
14 no winner, then we would receive a call again with a lower
15 price, and sometimes there were many such calls sequenced,
16 and this was causing advertiser performance issues, which is
17 what triggered Project Bell.

18 Q And when you say the same call, was it for the very
19 same impression or just similar impressions?

20 A Very same impression.

21 Q And how did you know you were seeing the exact same ad
22 opportunity?

23 A There were a couple of ways we could detect it. One
24 was by looking at some of our logs data we could identify
25 that there were multiple calls being used for the same exact

1 same ad opportunity. But we also came up with an algorithm
2 which could do it in a very reliable way.

3 Q Now, that log data, was that same data available to
4 competing buy-side tools if they wanted to try to identify
5 whether they were seeing the exact same ad opportunity?

6 A Yes. Competitors have access to the same kinds of data
7 that AdWords had.

8 Q And what kind of data specifically are we talking about
9 where competitor buying tools would have the exact same kind
10 of data?

11 A In this case, our detection algorithm simply relied on
12 the number of auction requests. We can -- there is an
13 experiment set up that we need to discuss to talk about
14 that, the specific type of data that we used.

15 MS. RHEE: Okay. So let's turn your attention to
16 DTX 372.

17 THE COURT: Any objection to 372?

18 MS. WOOD: No objection.

19 THE COURT: All right. It's in.

20 (Defense Exhibit Number 372 admitted into evidence.)

21 BY MS. RHEE:

22 Q Okay. And let's, in specific, go to the Bates page
23 ending in 621.

24 Now, Mr. Jayaram, there is a chart in front of you
25 where it seems a little bit confusing.

1 Can you walk us through what this chart
2 represents?

3 A Yes. What we see on the right side is a typical
4 multi-call setup where there is first a call with the floor
5 price of \$10, and then there is one with 9, 8, so on all the
6 way to 0.

7 So what happens here is, the idea behind this is
8 if -- let's set a call with a very high floor price for
9 example. First if someone bites and pays the floor price,
10 great, we can get \$10. If not, let's send the same request
11 again with a lower fee price. If someone bites, that's good
12 enough. If not, we'll reduce the price. So we'll keep
13 reducing the price all the way to 0, and someone will
14 definitely win it at that point in time.

15 Now, what the setup is trying to do is to make a
16 second-price auction look more like a first-price auction,
17 essentially, and extract more of the advertiser profits or
18 advertiser surplus.

19 (Reporter interrupted for clarification.)

20 THE WITNESS: Surplus.

21 BY MS. RHEE:

22 Q So what's wrong with publishers doing this kind of
23 multi-calling?

24 A There are multiple issues. First, from an advertiser
25 point of view, the auction is typically presented as a

1 second-price auction, but under the hood, this is
2 effectively implicating something closer to a first-price
3 auction, which is going to make advertiser performance a lot
4 worse, and that could have big implications in terms of
5 advertisers deciding that, okay, maybe display is not the
6 place where I want to use my budgets because my performance
7 is not that good.

8 The second issue is even impact for the user. So
9 it takes time to call the -- Google over and over for the
10 same ad request which adds a lot of latency to the ad
11 selection process itself. So sometimes the ads will show up
12 really late on the page causing a disruptive experience for
13 the user. The user may also simply move away from the page
14 before the ad even loads.

15 And, finally, it's also a very wasteful use of
16 machines to process the same ad request over and over.

17 MS. RHEE: Okay. So now let's direct your
18 attention to the slide that ends in Bates Number 624.

19 MS. WOOD: And, Your Honor, I just renew my
20 objection on cumulativeness and relevance since these are
21 issues that are largely dispensed with now in the current
22 complaint.

23 THE COURT: All right. I'm going to allow just a
24 little bit more with this, but move with --

25 MS. RHEE: Yes. Of course, Your Honor. This is

1 the last slide with respect to Project Bell.

2 BY MS. RHEE:

3 Q Mr. Jayaram, do you see here an impact slide about what
4 the results were post launch?

5 A Yes.

6 Q Okay. And when it says an estimated 60 percent of the
7 publishers that were subject to this treatment are not
8 mediating at this time, what does that mean?

9 A So we had built this algorithm to detect the multi-call
10 publishers who were using the multi-call setups, and then we
11 improved our bidding on those publishers to get better
12 performance for the advertiser.

13 And, in fact, that's what you see on one example
14 publisher here where this was a publisher making \$8,000 a
15 day, and they introduced a mediation or multi-call. What I
16 mean by mediation, there is multi-call setup on 7/14, which
17 increases revenue in the short-term. But that's when our
18 defenses kicked in, and then it took away some of those
19 gains, leading the publisher to then just turn off the
20 multi-call setup by themselves by observing the performance
21 from what happened when multi-call was added.

22 So through the self-incentivizing mechanism, what
23 we observed is 60 percent of the publishers that were using
24 multi-calls at the time of the launch had stopped using that
25 by the time this presentation was put together.

1 Q Now, were you aware of any competitors having their own
2 proprietary features to discourage or stop multi-calling?

3 A I'm not aware of the algorithmic details of other
4 competitors, of course, but I do know that The Trade Desk
5 has publicly asked for publishers not to have duplicate
6 calls for the same ad inventory.

7 Q Now, Mr. Jayaram, do you remember being asked on direct
8 examination about if there was a so-called Chinese wall
9 between the pub side and the buy-side?

10 A Yes.

11 Q And is there a Chinese wall, and has there ever been a
12 Chinese wall?

13 A The way that the teams have always worked is it's two
14 independent entities. I don't know of any formal firewall
15 as the question was posed to me.

16 Q And here, where this is clearly a buy-side product
17 feature or product innovation, why do you even care about
18 what the outcome is for publishers?

19 A We care about the outcome to publishers because we are
20 looking at the long-term sustenance of this ecosystem, and
21 that matters for advertiser performance as well.

22 Q Now, you remember being asked a series of questions on
23 direct examination with respect to a project called Project
24 Poirot?

25 A Yes.

1 Q Okay. Now, what was the issue or the problem that
2 Project Poirot was intended to address?

3 A So in 2016, we had started observing that even though
4 many exchanges claimed at the time to be running
5 second-price auctions or modified second-price auctions as
6 some labeled it, in a -- the auctions were becoming more and
7 more close to first price.

8 At the time, because there was this implicit
9 assumption that many of the auctions were still second
10 price, DV360 was bidding as if these were second-price
11 auctions and overbidding and overpaying as a result, and
12 that's why Project Poirot was kicked off.

13 Q Okay. So now I want to direct your attention to what's
14 already been admitted as DTX 615. And if I could direct
15 your attention to the slide ending in 635.

16 MS. RHEE: Thank you, Mr. Spalding. And if we
17 could blow that up so we can all see it. Okay.

18 BY MS. RHEE:

19 Q You see the slide in front of you, and it's titled
20 "Call It Second Price, but Run it Like a First Price"?

21 A Yes.

22 Q Okay. And underneath there's a description of a thing
23 called a dirty auction.

24 A Yes.

25 Q What is a dirty auction?

1 A By dirty auction, what we are referring to here are
2 auctions that have been -- that are supposed to be something
3 like a second-price auction but act more like a first-price
4 auction when it comes to pricing.

5 Q And how were you able to essentially detect that they
6 call themselves a second-price auction but they're running
7 much more like a first-price auction?

8 A This table -- we have multiple ways, but this table has
9 a good illustration.

10 Q And which table are we talking about so we can zero in
11 on it?

12 A The table on the right bottom of that slide.

13 Q Okay. The one with the colors?

14 A Yes.

15 Q Okay.

16 A Which it shows -- what it shows is for different
17 exchanges at that time, what was the average cost to bid at
18 the issue.

19 Q When you say cost to bid, whose cost?

20 A Here it's referring to the price that DV360 was paying
21 to the exchange and divided by the bid that was submitted.
22 So if \$1 bid was submitted and we pay 50 cents, then that
23 ratio would be a half.

24 And what we typically expect from a second-price
25 auction -- because in a second-price auction, of course, we

1 get charged the runner-up price, we expect that this ratio
2 would be in the rate of about 30 percent to 50 percent.
3 That's what we expected. And we see a couple of exchanges
4 there, United, which is a non-Google exchange, AdX around
5 30 percent. And then it starts getting interesting,
6 especially if you look at something like PubMatic, which was
7 at 90 percent.

8 So, in other words, for every dollar bid we were
9 submitting, on average we were paying 90 cents. There's no
10 way that's a second-price auction.

11 And this is the kind of observation that caused us
12 to work on Poirot and build out better bidding algorithms in
13 such cases.

14 Q So what's wrong, if at all, anything, with an exchange
15 pretending to be a second-price auction but really running
16 like a first-price auction? In other words, what's wrong
17 with the findings in red?

18 A In the second-price auction, the advertiser is
19 incentivized to submit the true value of the bid. But if it
20 was actually a first-price auction under the hood, then the
21 advertiser would have to pay the entire true value to the
22 exchange, which means they end up with zero profits. So
23 that's not sustainable.

24 Q And when you say that "they" would end up with zero
25 profits, who's the "they"?

1 A Advertisers.

2 Q And, in particular, this is DV360 advertisers; is that
3 right?

4 A Yes.

5 MS. RHEE: Okay. So let's go to the slide ending
6 in 636.

7 BY MS. RHEE:

8 Q Now, first question, Mr. Jayaram, who is this guy, and
9 why is his face on here?

10 A This is Hercule Poirot. He's a detective in the --
11 created by Agatha Christie.

12 (Reporter interrupted for clarification.)

13 THE WITNESS: Detective created by Agatha
14 Christie.

15 BY MS. RHEE:

16 Q And why was this project called Poirot?

17 A Because what we were trying to do here was to detect
18 when exchanges were saying they were running a second-price
19 auction, but really it was something else, so we decided to
20 name the project after a detective.

21 Q Okay. And then when you say here "there's an
22 algorithmic framework to detect and quantify deviations from
23 second-price auctions," what do you mean by that? How did
24 you go about creating this algorithmic framework?

25 A What we did was we -- so let's say the true value of

1 the advertisers was \$1, prior to Poirot we would just submit
2 \$1. What we started doing was, we started running small
3 experiments where we started lowering the bid. So sometimes
4 it would bid \$1, sometimes we would bid 90 cents, 80 cents,
5 70 cents, and so on and so forth. And what we then looked
6 for is how does the advertiser profit, or let's call it
7 advertiser surplus, change as a function of how much we
8 paid. What we expect is in a second-price auction, the
9 advertiser surplus would be maximized by just submitting the
10 true value. So just pick one in that case.

11 And in a non-second-price auction, what we expect
12 is there will be a bid below one, which maximizes the
13 advertiser surplus. So that's how we created this algorithm
14 by exploring this pace of bidding to figure out what would
15 be the right bid that we should submit to the ad exchanges.

16 Q Did Poirot apply that same algorithmic framework and
17 run it across all of the exchanges that DV360 was bidding
18 into?

19 A Yes.

20 Q And did that include AdX as well as all of the
21 third-party exchanges?

22 A Yes.

23 MS. RHEE: So now let's go to slide 644, which is
24 about launch impact. And I think the Court is familiar with
25 this. If we could go and -- thank you for blowing that up,

1 Mr. Spalding.

2 BY MS. RHEE:

3 Q Now, why do you begin on the left-hand side with
4 discussing advertiser impact, and what is the significance
5 of the sub-bullets that's underneath?

6 A Again, the goal of Project Poirot was to improve
7 advertiser performance while bidding on exchanges that were
8 deviating from second-price auctions.

9 So what we expect as an outcome of the launch is
10 that we improve the advertiser performance. We have two
11 metrics there, the first one is CPD, which refers to
12 conversions per dollar. So what our Poirot experiments told
13 us is advertisers could see a 7 percent increase in
14 conversions for \$1 they spend on advertising. And 6 percent
15 surplus increase, this refers to the advertiser profits that
16 we've talked about, which is the difference between the true
17 value and the amount of money that they had to pay to get
18 the true value.

19 Q Now, you see the bottom bullet where it says "very few
20 customers, less than 1 percent, opted out."

21 Who are the customers that are being referred to
22 here?

23 A It's referring to DV360 customers.

24 Q So DV360 advertising customers, Mr. Jayaram?

25 A Yes. Yes.

1 Q Okay. And when you say "opted out," did they have the
2 choice about whether they use Project Poirot or not?

3 A Yes.

4 Q Okay. And what does it mean that the less than
5 1 percent opted out?

6 A So about a week or two before Project Poirot fully
7 launched, we communicated to DV360 advertisers that we are
8 going to launch this feature, and they can opt out of it by
9 unchecking a box in the front end. And so that feature was
10 made available to them.

11 And what we saw was less than 1 percent of
12 advertisers opted out, and this percentage has continued to
13 remain really small over the years, showing to us that
14 advertisers truly value this feature.

15 Q Now, the Court has already seen this, and so we don't
16 need to belabor the point.

17 You also looked at exchange impact, exchange by
18 exchange; is that right?

19 A Yes.

20 Q And now the government has highlighted the negative
21 impact for the likes of PubMatic and OpenX specifically, but
22 towards the bottom of that chart, what, if anything, do you
23 see in terms of positive impact for exchanges other than
24 AdX?

25 A If we recall the table we just saw, the highest

1 bid-to-cost ratios were around PubMatic and OpenX, showing
2 that they were extracting a lot of advertiser surplus by
3 running close to first-price auctions. That's why you see
4 those two exchanges having the biggest negative impact here.

5 On the flipside, we looked at United over there
6 which had roughly 30 percent bid-to-cost ratio. And then
7 there was also Improve Digital and AdX and AdSense. These
8 were all in our assessment basically running -- based on
9 what we've seen from in Poirot, they were running
10 second-price auctions. And so some of the money that was
11 saved by bidding more optimally on the non-second-price
12 auctions then got distributed to some of the exchanges that
13 were running second-price auctions that they could buy
14 conversions at a better price. So that's why you see those
15 exchanges seeing a positive impact.

16 Q Now, I want to direct your attention to something that
17 you were shown during your direct examination, and that's
18 PTX 860.

19 MS. RHEE: If we could pull that up.

20 BY MS. RHEE:

21 Q And this is titled Poirot 2.0; do you remember that?

22 A Yes.

23 Q Okay. So now in particular, the government attorney
24 directed your attention to the results-per-exchange. If we
25 could go to page 2 there.

1 And, again, you can see a negative impact with
2 respect to certain exchanges; do you see that?

3 A Yes.

4 Q But there's a page break, and that chart actually
5 continues on.

6 MS. RHEE: So if we could blow up actually the
7 whole chart in its entirety, notwithstanding the page break.
8 Thank you.

9 BY MS. RHEE:

10 Q Now, again, you see some of the same names as from the
11 additional Poirot launch like PubMatic and OpenX; you see
12 that?

13 A Yes.

14 Q Okay. But what you also see if you keep going down are
15 some positive numbers.

16 And, again, what do those positive numbers
17 reflect, like Tremor Video, Right Media, et cetera?

18 A Yes. Again, Project Poirot was an improvement -- 2.0
19 was an improvement, and so what we did see is somewhat the
20 same, which is advertisers' surplus increased across the
21 board, as we can see. It shows the algorithm is improving
22 performance for advertisers. And some of the
23 non-second-price auctions lost revenue, and some of the
24 auctions that were second-price -- exchanges that were
25 running second-price auctions got some of the money through

1 the redistribution of budgets.

2 Q And again here, even with respect to 2.0, you see the
3 middle column titled "Surplus"?

4 A Yes.

5 Q Do you see that?

6 A Yes.

7 Q And is that advertiser surplus?

8 A That's correct.

9 Q And what does advertiser surplus show here in terms of
10 the effect of Poirot 2.0?

11 A Advertiser surplus is proxy for advertiser profit
12 rates. So even with something like AppNexus, we see
13 advertiser profits went up by 20 percent, even though the
14 revenue declined. And they're actually correlated. We were
15 able to win the value for advertisers at a lower price,
16 which is why you see the revenue going down, but the surplus
17 went up as a result.

18 Q Okay. Now, you were shown on direct examination

19 PTX 734.

20 MS. RHEE: So if we could pull that up. And if we
21 could go to the bottom of this exchange starting with the
22 February 28th, 2019 email by Mr. Shodjai. No. Keep going
23 down. Sorry.

24 BY MS. RHEE:

25 Q Now, Mr. Jayaram, did the Google buy-side team or

1 Google's buy-side charge advertisers for that option to turn
2 on Project Poirot?

3 A No, we don't charge, even as today.

4 Q Okay. So now here at the bottom, you see Mr. Shodjai
5 saying check out this article, The Trade Desk takes a cut of
6 the Poirot savings they generate; do you see that?

7 A Yes.

8 Q And then Mr. Shodjai asks: "Hey, why can't we do
9 something like this?" And then you respond, and you have a
10 lot of -- you have a lot of explanations in that response.

11 But, to your recollection, were you made aware
12 that The Trade Desk charges for at least their proprietary
13 version of this kind of second auction detection?

14 A Yes.

15 Q Okay. And despite the fact that at least one of your
16 colleagues is asking how come we don't charge for this, did
17 Google buy-side ever charge for Poirot?

18 A No.

19 Q And why not?

20 A So there are a number of reasons listed here, and some
21 of them are not valid anymore. For example, the last point
22 says, okay, maybe we could do this after AdX 1P, but that
23 has happened for five years ago.

24 So, to me, the primary reason is that ultimately
25 we want to provide the products that give the best

1 performance to advertisers, and we didn't charge for Poirot
2 because it's inherently a part of providing the best
3 performance for advertisers.

4 Q Now, Poirot was limited to DV360 advertisers; is that
5 right?

6 A Project Poirot itself was.

7 Q Okay. And was there a companion project that basically
8 did the same thing as Poirot but for Google Ads'
9 advertisers?

10 A Yes.

11 Q And what was that named?

12 A Project Marple.

13 Q Is that yet another detective from the Agatha Christie
14 series?

15 A Yes.

16 Q Okay. Now, with respect to the focus of the direct
17 examination questions on Poirot which applies only to
18 DV360 --

19 MS. RHEE: Can we please pull up Plaintiffs'
20 Demonstrative A.

21 BY MS. RHEE:

22 Q Now, Mr. Jayaram, where would you put DV360 in
23 somewhere in this schematic?

24 A Somewhere where it is listed in the slide.

25 Q Okay. So where it says demand-side platform or DSP?

1 A Yes.

2 Q Okay. Do you see a red box around that?

3 A No.

4 Q Okay. And you don't know what the significance of the
5 red boxes are; right?

6 A No.

7 Q Okay. Now, you remember being asked on direct
8 examination about UPR and the move to a first-price auction,
9 otherwise referred to in this Court as UFPA?

10 A Yes.

11 Q Okay. Now, was that a sell-side product or feature
12 rollout?

13 A Yes, it was.

14 Q Okay. And as a result, at least from an engineering
15 perspective, were you involved in any of that?

16 A Not on the implementation. I've seen some of the
17 experiments that looked at the impact of UPR.

18 Q Okay. And so I want to actually turn to those
19 experiments, but before we do, at least from a buy-side
20 perspective, in particular, the DV360 advertisers and the
21 Google Ads' advertisers, what, if any, value was there for
22 the advertisers in the move to a first-price auction?

23 A The first price -- so you're referring to AdX moving to
24 a first-price auction?

25 Q Correct.

1 A I think by the time AdX moved to a first-price auction,
2 most of the large -- other exchanges had also moved to a
3 first-price auction. And from an advertiser point of view,
4 sometimes this meant our bids were partly going into a
5 second-price auction, partly going into a first-price
6 auction, causing potential efficiencies and issues in how we
7 allocate that. So this was a cleaner setup overall.

8 Q Now, with respect to Uniform Pricing Rules or what
9 we've all heard in this courtroom as UPR, from the
10 perspective of the buy-side for Google's advertisers, what,
11 if any, benefit was there to move to uniform price floors?

12 A Prior to the move when different supply paths could
13 have different price floors, it was sometimes again used as
14 a mechanism to create a waterfall of cause with different
15 floor prices. And, again, we've talked about why that sort
16 of setup causes issues for advertiser performance.

17 So that is -- that is a problem that gets solved
18 with UPR for buy-side. I think it also makes it -- makes it
19 easier to bid when we know that all the supply paths are
20 roughly comparable.

21 Q Now, I'm going to direct your attention to DTX 768,
22 which has already been admitted into evidence. And, in
23 particular, to your comment in this exchange. Again, no pun
24 intended.

25 You see your name here?

1 A Yes.

2 Q Okay. And you were involved, I think as you were
3 alluding to, in doing some control experiments about the
4 possible impact of UPR before it actually rolled out?

5 A Yes.

6 Q Okay. And in this back-and-forth, are you reporting
7 numbers from that control experiment?

8 A Yes.

9 Q Okay. Where you ran that control experiment, do you
10 recall the date that you ran those?

11 A It was -- all I can remember is it was prior to the
12 unified first price launch.

13 Q Okay. So when you ran this control experiment, would
14 you have run it against a second-price auction world or a
15 first-price auction world?

16 A At the time, the world was a second-price auction
17 world.

18 Q Okay. So the results that you reported out, that was
19 based on it being run in a second-price auction world?

20 A Yes.

21 Q Okay. Now, how significant, if at all, are price
22 floors in a first-price auction world versus a second-price
23 auction world?

24 A I would say the price floors are less important in a
25 first-price auction world than a second-price auction world,

1 because in a second-price auction world, they contribute to
2 the pricing aspects as well, but in a first-price world, the
3 bid is the price.

4 Q Okay. Now, again, this is another document that's
5 already been admitted, PTX 1035. And if I could direct your
6 attention to the page ending in Bates 360.

7 MS. RHEE: And, again, this should look familiar
8 to the Court.

9 BY MS. RHEE:

10 Q You see, again, this control -- control experiment
11 results in greater detail; yes?

12 A Yes.

13 Q Okay. And are these numbers that are being reported
14 out based on the experimentation being run in a second-price
15 auction?

16 A Yes.

17 Q Okay. Now, you were asked a lot of questions on your
18 direct examination about header bidding; do you remember
19 that?

20 A Yes.

21 Q Okay. And, in particular, just to try to kind of
22 ground us, let's begin with what I think is the
23 earliest-in-time document that the government showed you,
24 and that is PTX 520.

25 You see that?

1 MS. RHEE: Whoops. That's not PTX 520. Maybe,
2 Mr. Klein, could I get your assistance with PTX 520 then?
3 Thank you so much. Okay. And if we could, Mr. Klein, with
4 your assistance, blow up the -- yeah, the heading and who
5 the authors are. Okay. Do you see that? Okay. Thank you.

6 BY MS. RHEE:

7 Q Mr. Jayaram, do you see the slide in front of you or
8 the document blown up in front of you?

9 A Yes.

10 Q And you remember being asked a lot of questions about
11 this document in direct examination?

12 A Yes.

13 Q Okay. And your name is on a whole list of names right
14 under the title; yeah?

15 A Yes.

16 Q Okay. Now, you kept saying that you disagreed with
17 this document, notwithstanding the fact that your name is on
18 this title.

19 So let's just begin with, do you know, if at all,
20 who actually authored this document?

21 A I can only guess. I do not know for sure.

22 Q Okay. Was it you?

23 A No.

24 Q Okay. And sitting here, is your best guess -- well,
25 actually, let me just withdraw that.

1 You know for certain it was not you; is that
2 right?

3 A Yes. Yes.

4 Q And how do you know that?

5 A I do not recall having seen this document or reviewed
6 this document at the time it was created.

7 Q Okay. Now, just to step back, is header bidding and
8 the product features in response to header bidding like
9 Exchange Bidding or Open Bidding, are those sell-side
10 product features and innovations or buy-side product
11 features and innovations?

12 A Sell-side.

13 Q Okay. And now for as long as you've been on the
14 buy-side at Google, has the buy-side rolled out any products
15 or features with respect to header bidding?

16 A No.

17 Q Okay. Now, insofar as this document purports to be a
18 buy-side perspective on header bidding, what does it even
19 mean to have a buy-side perspective on header bidding?

20 A I think to have a buy-side perspective, something needs
21 to be discussed with a lot of leads across the buy-side who
22 represent different parts of the business.

23 For example, to be able to truly put together a
24 buy-side perspective on header bidding, we need to talk to
25 infrastructure leads, we need to talk to product leads, we

1 need to talk to bidding leads, auction. But none of those
2 discussions really happened.

3 This idea was briefly discussed, but we had many
4 concerns around header bidding, which is why that level of
5 discussion didn't happen to be able to come up with a
6 buy-side perspective on header bidding.

7 Q At least speaking for yourself personally, because in
8 the back-and-forth there were some parts of this document
9 you agreed with and some parts you didn't.

10 Just speaking for yourself, Mr. Jayaram, from the
11 advertiser perspective, was there a clamoring for header
12 bidding?

13 MS. WOOD: Objection. Foundation.

14 THE COURT: Sustained.

15 BY MS. RHEE:

16 Q From your own perspective, were you aware of
17 advertisers asking for header bidding?

18 MS. WOOD: Objection. Foundation.

19 THE COURT: I don't think that's good. He's not
20 the right person to be asking that question of. So
21 sustained.

22 MS. RHEE: Absolutely fine, Your Honor.

23 Now, turning to page 3 of this document. Yes. If
24 we could go to the many buyers embracing header bidding. If
25 I could direct your attention to just those sub-bullets

1 here. Yes. Thank you so much. Thank you, Mr. Klein.

2 BY MS. RHEE:

3 Q Now, Mr. Jayaram, you see here this document that you
4 did not author, nevertheless talks about Facebook plans to
5 buy via AppNexus, Index Exchange, header bidding wrappers;
6 do you see that?

7 A I see it.

8 Q And similarly underneath that you see a reference to
9 Criteo having been doing this for a long time and
10 attributing its recent growth to buying through header
11 bidding; yes?

12 A Yes.

13 Q And, in fact, at least according to this document, that
14 header bidding now makes up 35 percent of Criteo's revenue?

15 A I see it.

16 Q Okay. So generally, you were aware of the rising
17 phenomenon of header bidding at this time; is that fair?

18 A Yes.

19 Q Okay. But other than being generally aware, what, if
20 any, role did you have in the header bidding discussions at
21 the company?

22 A The experiments that we talked about that I briefly
23 worked on to measure what would happen if we do not purchase
24 on header bidding domains.

25 Q Okay. And then, finally, there was a discussion or a

1 questions by the government attorney on strategic
2 considerations, which is I think the very end of this
3 document.

4 MS. RHEE: If we could get your assistance,
5 Mr. Klein, there.

6 BY MS. RHEE:

7 Q And here, you see that under the first paragraph in
8 strategic considerations, this is about a combination to
9 compete against direct sold; do you see that?

10 MS. RHEE: If we could maybe highlight that just
11 to keep this moving.

12 MS. WOOD: Objection to the lack of context.

13 THE COURT: Well, first of all, we're going to
14 recess for the lunch break, and we can get back to this
15 after lunch.

16 MS. RHEE: Thank you, Your Honor.

17 (Court recessed for lunch at 1:00 p.m)

18 -----

19 I certify that the foregoing is a true and accurate
20 transcription of my stenographic notes.

21 Stephanie Austin

23 Stephanie M. Austin, RPR, CRR

24

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